The Oil and Gas Journal

PUBLISHED WEEKLY BY THE PETROLEUM PUBLISHING COMPANY AT TULSA, OKLAHOMA

HOME OFFICE, 211 S. CHEYENNE, TULSA
PHONE 3-6291

P. C. LAUINGER, *President* — *Editor*, C. O. WILLSON

LYNN M. NICHOLS, *Managing Editor* — W. V. HOWARD, Ph.D., *Field Editor*

W. T. ZIEGENHAIN, *Refinery Editor* — W. L. NELSON, *Technical Editor*

Associate Editors

HARRY F. SIMONS — T. P. SANDERS

D. H. STORMONT — PAUL REED

H. STANLEY NORMAN

District Editors

Houston, 617 Caroline St.
NEIL WILLIAMS — F. L. SINGLETON

Fort Worth, Petroleum Bldg.
R. MARNE SANFORD

Shreveport, City Bank Bldg.
GEORGE WEBER

Los Angeles, Union Oil Bldg.
L. P. STOCKMAN

Washington, Natl. Press Bldg.
HENRY D. RALPH

Saginaw, News Bldg.
O. C. PRESSPRICH

Denver, State Office Bldg.
TOLBERT R. INGRAM

New York, 415 Lexington Ave.
J. P. O'DONNELL

Oil City, Derrick Bldg.
A. C. MacINTYRE

Chatham, Ontario, 35 Stanley Ave.
VICTOR LAURISTON

S. H. ROURKE, *Business Manager*

M. L. DURHAM, *Circulation Manager*

Advertising

E. KLAPPENBACH, *Vice President*

New York, 415 Lexington Ave.
LLOYD CAIN

Cleveland, Leader Bldg.
HOWARD MARKT

Chicago, 105 W. Madison
C. R. FARMER
KENNETH J. LANGLEY

Tulsa, 211 S. Cheyenne Ave.
JAMES D. HUGHES

Houston, 617 Caroline St.
WAYNE RIVES

Los Angeles, 1406 S. Grand Ave.
J. HOWARD TINKHAM

Twickenham (Middlesex) England—72 Cole Park Road
A. J. CHAMBERS

Table of Contents

Vol. 39, No. 29 — November 28, 1940

News Developments

Trends: Texas Holds Key to Developments Over Remainder of 1940 19
Pipe Lines Expand to Meet New Operating Conditions ..... *H. Stanley Norman* 20
Sparks From the News 22
Leasing Campaign in Dakotas Foreshadows Developments 23
Coming Months Critical Period for Interstate Oil Compact ..... *Harold B. Fell* 24
Tulsa Meeting to Consider Vital Compact Changes 25
New Pools and Extensions Bring Revival to Okfuskee County 26
News From the State Capitals 28
Editorial: The Matter of Equity 29
1941 Lucas Medal Awarded to Schlumberger Brothers 30
Labor Disputes Bring Proposals for Regulatory Legislation ..... *Henry D. Ralph* 31
Deaths 32
The Markets 32
International News 33
Natural Gas Used in Making Magnesium and Antimony ..... *Paul Reed* 35
Natural Gas News 36
Natural Gasoline News 36
Refinery Expansion 36
Programs and Meetings 37
Well Logs and Field Data of Active Fields—Central South Louisiana 58
Pipe-Line Activity 69

Engineering—Operating

Cotton Valley Structure Well Adaptable to Recycling ..... *George Weber* 40
High Antiknock Aviation Fuels From Light Hydrocarbons ..... *S. H. McAllister* 42
Preventing Air Pockets in Oil-Gathering Lines by Use of Bleeders ..... *Neil Williams* 51
Operating Ideas 53
Study of Plumbite Solutions Used in Petroleum Refining ..... *Alex Stewart and C. E. Corriss* 54
Portable Separators Used When Drilling-In Wells 61
Progress in Metals ..... *W. L. Nelson* 64

Field Developments

Field Developments 71
N. Louisiana, Arkansas ..... *George Weber* 72
Permian Basin, Panhandle ..... *R. Marne Sanford* 75
North Central Texas *R. Marne Sanford* 76
Texas Gulf Coast ..... *Neil Williams* 79
Oklahoma 80
Kansas 83
Forest City Basin 83
Eastern Texas ..... *R. Marne Sanford* 84
California ..... *L. P. Stockman* 85
Southwest Texas ..... *F. L. Singleton* 88
Illinois 89
Michigan ..... *Otto C. Pressprich* 91
Appalachian Fields 92
Indiana, Ohio, Kentucky 93
Among Drilling Contractors 94
Louisiana Gulf Coast ..... *F. L. Singleton* 96
Rocky Mountain Area ..... *T. R. Ingram* 97
Mississippi ..... *George Weber* 103
Canada ..... *Victor Lauriston* 104

Markets and Prices

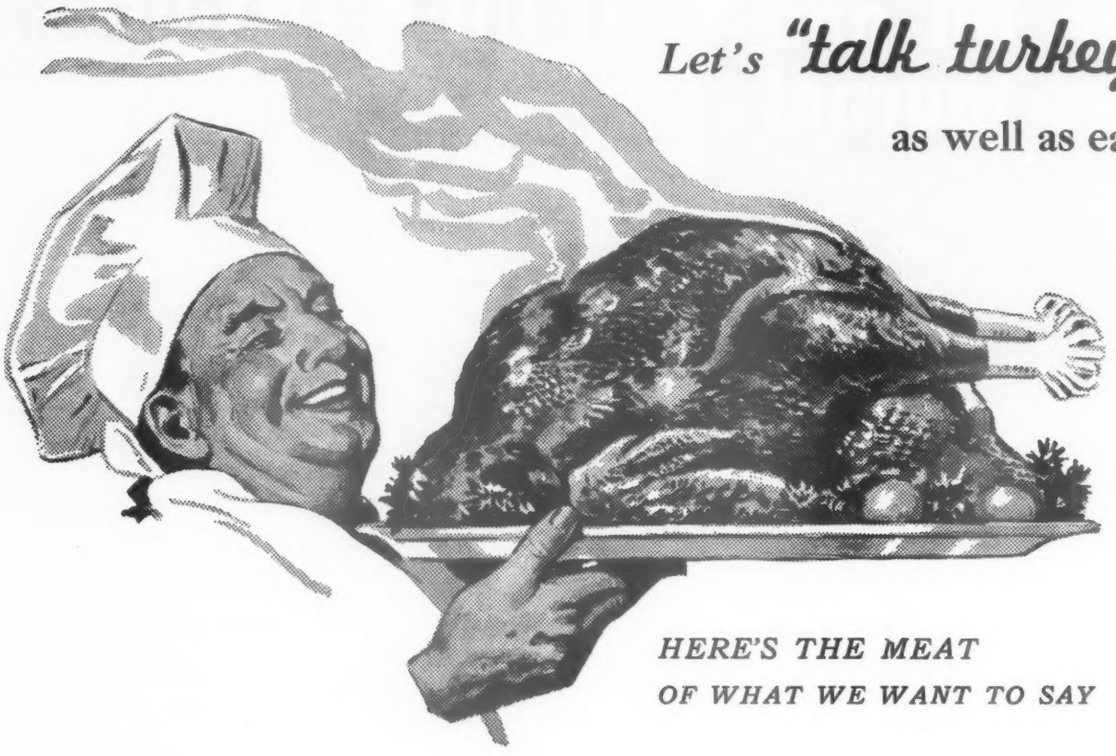
Group 3 Market ..... *H. Stanley Norman* 108
New York Market ..... *J. P. O'Donnell* 109
A.P.I. Refinery Report 109
Tank-Wagon Market 110
Refinery Prices 111
Crude-Oil Prices 115

Additional Features

Record of Oil Securities 105
Personal Paragraphs 106
Equipment Progress 112
Classified Advertising 114
Advertisers' Index 116

SUBSCRIPTIONS: United States, 1 year, $6.00; 6 months, $3.00. Elsewhere, 1 year, $7.00; 6 months, $3.50. SINGLE COPIES: 20 cents each. Back copies, when over a year old, 50 cents. CHANGES OF ADDRESS reaching the Tulsa office of the Journal by Saturday take effect with the following issue.

Copyright, 1940, by The Petroleum Publishing Company



Let's **"talk turkey"**

as well as eat it!

HERE'S THE MEAT
OF WHAT WE WANT TO SAY

BANKS manufacture CREDIT . . . the raw material used is DEPOSITS . . . the finished product is LOANS. Like any other manufacturer, a bank wants a MARKET for its product.

OUR PRODUCT IS LOANS

OUR SPECIALTY IS "Oil Loans"

OUR BEST MARKET IS THE OIL INDUSTRY

Now, let's talk turkey!

WITH a specialized product for a specialized market, we want to make loans to the Oil Industry. We have the money and we honestly believe we are best equipped to meet your loan demands.

Come in and talk turkey with us.

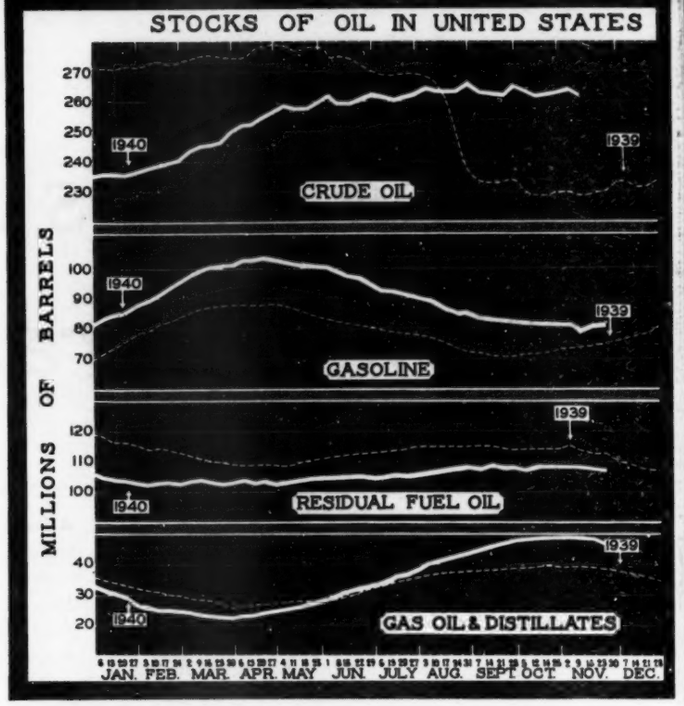
NATIONAL BANK OF TULSA

The Oil Bank of America

Member Federal Deposit Insurance Corporation

Trends

Texas Holds Key to Developments Over Remainder of 1940



MARKET students are centering their attention on developments in Texas over the next 30 days as the controlling factor in operations for the entire industry east of California. North of Texas in Oklahoma, Kansas and Illinois, recent developments in regard to outlets for crude have been favorable and according to several in daily contact with conditions there is a better balance between supply and demand than any time this year.

In Texas, little attention will be paid to the announced allowable for the state over the remainder of the year. The recent hearing at Austin aired, as never before, conditions in the Lone Star State brought about by the granting of special allowables and exemptions from shutdown days. It was claimed that these concessions, after the monthly figure for the entire state had been announced, are the basic source of trouble and cannot continue. Data were presented showing that a substantial part of production that comes from these midmonth actions is sold under the market and these sales in turn contribute to the general weakness which has been apparent in refinery markets in the Gulf Coast section for many months. It was indicated that if the practice did not stop, major buyers would have no choice but to post crude-price schedules in several fields which will be competitive. Some feel that if price cuts develop in certain fields they will quickly spread to the entire state.

In refinery markets the strongest products are those which are experiencing a seasonal upturn in demand. In several refining areas the improvement includes all products extending from kerosene to the low-gravity fuel oils. In this connection some observers have expressed the fear that the demand for the heavy residual fuel oils will exceed the supply and result in excess crude runs to stills. As shown in the accompanying table and charts the heavy fuel oils do occupy the strongest statistical position of any of the major refinery products so far as the entire industry is concerned. However, all the decline in residual fuel oils is accounted for by the reduction of inventories in California. The decline in that state compared to a year ago is approximately 8½ million barrels. East of California stocks are about 3 million barrels greater than they were a year ago. The increases are scattered in several areas with stocks in the Mid-Continent slightly less than in November 1939.

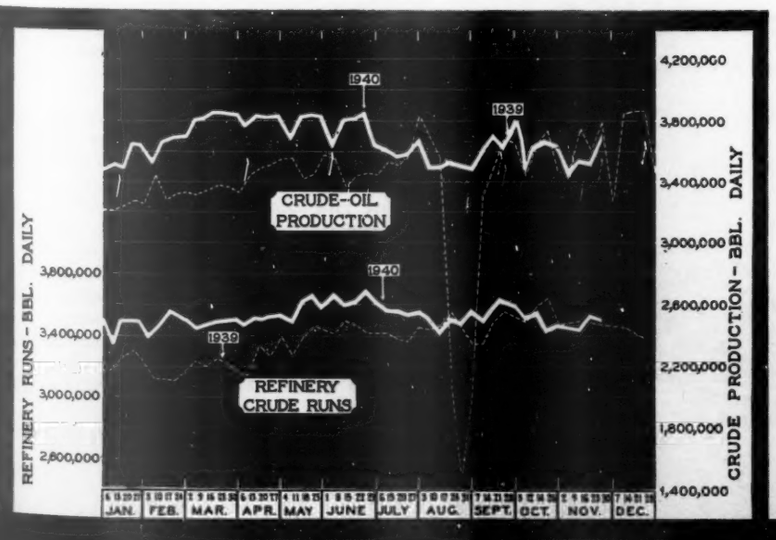
It is expected that the demand for these lowest-gravity fuels will continue heavy through the winter months. In the East and Middle West large orders are coming from industries which are participating in the defense-program business. It is predicted that spot fuel prices will advance substantially from present levels over the next 5 months.

- **CRUDE PRODUCTION** *3,768,953 bbl. daily average—up 197,088 bbl. One year ago 3,815,745 bbl.*
- **CRUDE STOCKS** *261,631,000 bbl. as of November 9—down 2,189,000 bbl. One year ago 230,037,000 bbl.**
- **GASOLINE STOCKS** *80,100,000 bbl. as of November 23—up 37,000 bbl. One year ago 75,980,000 bbl.*
- **RESIDUAL FUEL-OIL STOCKS** *106,871,000 bbl. as of November 23—down 280,000 bbl. One year ago 111,207,000 bbl.*
- **GAS OIL AND DISTILLATES** *47,511,000 bbl. as of November 23—down 597,000 bbl. One year ago 38,402,000 bbl.*
- **REFINERY RUNS** *3,510,000 bbl. daily week ended November 23—down 30,000 bbl. One year ago 3,510,000 bbl.*

*Crude stock report for November 16 delayed.

DAILY AVERAGE PRODUCTION FOR WEEK

	Nov. 23, 1940	Bur. Mines Nov. est. of demand	Nov. state allowables	Nov. 16, 1940
Arkansas	69,765	71,000	69,508	69,285
California	605,750	583,000	571,000	622,550
Eastern states	105,150	100,600	.....	105,100
Illinois	334,578	385,000	.....	340,840
Kansas	190,850	186,000	190,000	192,200
Louisiana	284,900	274,000	279,973	282,415
North Louisiana	*66,600*	.....	.....	*66,725*
Louisiana Gulf Coast	*218,300*	.....	.....	*215,690*
Michigan	47,150	51,000	.....	47,360
Mississippi	15,625	13,800	.....	16,140
Nebraska	3,200	.....	.....	3,100
New Mexico	103,420	104,000	104,000	103,130
Oklahoma	400,925	413,000	390,000	396,475
Rocky Mountain states	94,790	97,600	.....	95,130
Texas	1,512,850	1,291,000	1,316,657	1,298,140
East Texas	*447,000*	.....	.....	*374,750*
West Texas	*251,275*	.....	.....	*215,100*
North Central Texas	*151,650*	.....	.....	*141,300*
East Central Texas	*84,200*	.....	.....	*74,900*
Texas Panhandle	*73,825*	.....	.....	*62,000*
Texas Gulf Coast	*398,000*	.....	.....	*340,340*
Southwest Texas	*106,900*	.....	.....	*89,750*
Total United States	3,768,953	3,570,000	.....	3,571,865


CRUDE-OIL PRODUCTION
REFINERY CRUDE RUNS
1940
1939
REFINERY RUNS - BBL. DAILY
CRUDE PRODUCTION - BBL. DAILY
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Pipe Lines Expand to Meet New Operating Conditions

By H. STANLEY NORMAN

● Petroleum handled through pipe lines of companies operating on an interstate scale increased 18.4 per cent through the first three quarters this year over 1939.

● Reports from the I.C.C. for the third quarter show the early trend of drawing crude supplies from sources more remote than Illinois from the Middle West refining centers.

● Eastern pipe lines were recipients of increased traffic both in 1939 and the first 9 months of this year because of Illinois which is still sending small amounts of crude as far east as New York.

MOVEMENT of Illinois oil is still a potent factor in the operations of interstate pipe lines, although declining production in that state has caused the inevitable slump in traffic in the past few months compared with the midyear.

Reports made by 45 systems having interstate operations reflect vividly the scope of influence Illinois has exerted on the nation's petroleum traffic. Statistical data submitted to the Interstate Commerce Commission from which this analysis is drawn contain an indefinite amount of duplication and the conclusions are subject to distortion to whatever extent this occurs. The duplication appears in the amount of oil handled by the individual companies. There is no breakdown to show the volume of oil which may have passed through more than one system and thereby represents a duplication in the reported number of barrels handled.

In a report for the third-quarter operations of interstate companies, the I.C.C. shows a gain of 16 per cent in the volume of petroleum movement by pipe lines this year over 1939. For the first 9 months, petroleum handled through interstate pipe lines totaled 986,456,342 bbl. against 833,181,604 bbl. last year, an increase of 18.4 per cent. At least a part of the increase must be discounted. Some of the most substantial increases have been reported by the Middle West lines and those in the eastern section of the country. Diversity of pipe-line ownership in the eastern section of the country magnifies the factor of duplication.

Revenues from pipe-line operations in the third quarter this year totaled $51,964,896, an increase of 8 per cent. For the 9 months, however, the revenue from transportation services aggregated $157,541,543 which is an increase of only 6 per cent.

Humble Pipe Line Co. continued to lead all companies reporting to the I.C.C. from a standpoint of volume of petroleum transported although the third-quarter traffic was substantially lower than in preceding quarters of this year. Volume of oil transported by Humble in the third quarter dropped below the 1939 rate for the first time this year. Symbolic of the increase in runs from the middle western part of the country to the east is the operation of Buckeye Pipe Line Co., one of the important links with the eastern network of pipe lines. Buckeye handled 57,910,825 bbl. of oil during the first 9 months this year which is an increase of 82 per cent over 31,767,989 bbl. of traffic in the same time last year. The increased runs through Buckeye facilities have been maintained at a fairly static rate in each of the first three quarters. Absence of a dip in Buckeye runs in the third quarter is explained by continued use of this system by Socony-Vacuum Oil Co., Inc., for delivering Illinois crude to the Northern Transit Co. and eventually to its Buffalo, N. Y., refinery. Comparison of the Northern Transit fluctuations in traffic disclose the contraction of crude runs to eastern refineries in the past few months, although there are other more striking examples. During the first half of this year, Northern Transit handled 8,971,881 bbl. of oil, a gain of 81 per cent. In the third quarter, however, Northern Transit runs slumped approximately 1,000,000 bbl. below the preceding rate and the gain for three quarters was reduced to 52 per cent. The retrenchment in National Transit operations traces back to discontinuance of the Illinois crude movement to eastern refineries in July and August.

SUMMARY OF PIPE-LINE MILEAGE OPERATED, BY STATES

Name of state—	*1940	†1939
Arkansas	820	792
Colorado	86	86
Illinois	5,709	4,660
Indiana	2,275	2,208
Iowa	926	925
Kansas	8,010	6,907
Kentucky	262	598
Louisiana	2,587	2,638
Michigan	827	840
Minnesota	247	247
Mississippi	3	.....
Missouri	4,898	4,897
Montana	171	171
Nebraska	386	387
New Jersey	325	326
New Mexico	1,167	939
New York	641	543
Ohio	7,007	7,359
Oklahoma	15,742	16,156
Pennsylvania	9,039	9,213
Texas	31,936	30,969
Utah	80	.....
West Virginia	4,349	4,349
Wyoming	1,188	709
Total	96,681	‡95,919

*As of January 1, 1940. †As of January 1, 1939. ‡Later corrected to 95,938 miles.

Influence of Illinois Oil

Probably the most concise impression of the influence of Illinois crude oil on pipe-line operations is found in the reports for the Texas Pipe Line Co. and the Illinois Pipe Line Co.

The Texas Pipe Line Co. handled 87,103,133 bbl. of crude in the first 9 months this year, an increase of 59.6 per cent over the total of 54,549,294 bbl. reported for the same period in 1939. Texas-Empire, which operates feeder lines from the Illinois field to the trunk-line system, handled 23,921,447 bbl. in the first three quarters, an increase of 30 per cent.

Expansion of operations by the Illinois Pipe Line Co. goes back to the earliest phases of the Illinois basin development and, consequently, the impressive comparison is hinged on 1940 and 1938 reports. In the first three quarters of this year the Illinois company handled 70,971,728 bbl. of oil, an increase of 25 per cent over 1939 but a gain of 73 per cent over 1938.

The gradual return to normalcy of operations by Ajax Pipe Line Corp., one of the major arteries for moving Mid-Continent crude to the Middle West refineries, gives the most significant evidence of shifting demand created by the Illinois production decline. After dropping to an all-time low for Ajax operations in the first quarter of this year, the volume of crude handled has risen by equally proportioned advances in the second and third quarters to almost the 1939 level. In the first quarter, 1940, Ajax handled 319,801 bbl. of crude against 1,460,522 bbl. in 1939. Second-quarter volume through the Ajax line totaled 531,469 bbl. and increased to 778,042 bbl. in the third quarter against 853,739 bbl. a year ago.

Shortened Hauls

Still another conception of the shortened pipeline hauls is the fact that while total volume of movement was increasing 4 per cent in 1939 the raise in barrel-miles was only 0.7 per cent. Reporting pipe lines handled 1,228,027,537 bbl. in 1939 against 1,172,349,938 bbl. in 1938, and 1,288,419,973 bbl. in 1937.

Sixty-four companies responded to the I.C.C. questionnaire on mileage of pipe lines in the annual report for 1939 which was issued from Washington last week. Pipe-line mileage operated by the reporting companies totaled 98,681 miles, including 53,641 miles of trunk crude and 5,467

Future gasoline-line traffic will be increased by this Florida to Tennessee carrier

PIPE-LINE MILEAGE OPERATED, BY INDIVIDUAL COMPANIES

Name of company—	*1940	†1939
Ajax Pipe Line Corp.	796	796
Aloco Pipe Line Co.	95	.....
American Liberty Pipe Line Co.	460	460
Arkana Transit Corp.	35	32
Arkansas Pipe Line Corp.	183	183
Atlantic Pipe Line Co.	1,515	1,487
Atlas Pipe Line Corp.	270	263
Bell General Transit Corp.	38	38
Bradford Transit Co.	709	724
Buckeye Pipe Line Co.	6,428	6,541
Buffalo Pipe Line Corp.	161	161
Continental Pipe Line Co.	1,460	1,191
Detroit Southern Pipe Line Co.	85	85
Empire Pipe Line Co.	786	792
Eureka Pipe Line Co.	4,349	4,349
Globe Pipe Line Co.	3	3
Great Lakes Pipe Line Co.	2,127	2,134
Gulf Refining Co.	8,087	8,022
Humble Pipe Line Co.	7,332	7,205
Illinois Pipe Line Co.	4,586	4,777
Indiana Pipe Line Co.	658	658
Kaw Pipe Line Co.	546	.....
Keystone Pipe Line Co.	656	656
Magnolia Pipe Line Co.	5,997	5,780
Michigan-Toledo Pipe Line Co.	299	300
Middlesex Pipe Line Co.	56	56
National Transit Co.	3,543	3,468
New York Transit Co.	322	288
Northern Pipe Line Co.	624	624
Ohio River Pipe Line Co.	4	.....
Oklahoma Pipe Line Co.	1,398	1,491
Pan American Pipe Line Co.	163	121
Phillips Pipe Line Co.	799	799
Pure Transportation Co.	781	839
Pure Oil Pipe Line Co. (Pa.)	.....	57
Bancroft-Bunker Hill Pipe Line Co.	22	.....
Rocky Mountain Pipe Line Co.	247	238
Shell Pipe Line Corp.	4,604	4,634
Sinclair Refining Co.	12,241	12,334
Socony-Vacuum Oil Co., Inc.	381	.....
Sohio Pipe Line Co.	626	.....
Southwest Pennsylvania Pipe Line	1,785	1,806
Southern Pipe Line Co.	269	269
Southern Liberty Pipe Line Co.	.....	49
Southern Pipe Line Corp.	63	36
Standard Oil Co. of Louisiana	1,942	1,860
Standish Pipe Line Co.	1,203	1,176
Stanolind Pipe Line Co.	7,246	7,314
Sun Oil Line Co.	98	98
Sun Pipe Line, Inc.	88	90
Susquehanna	612	611
Texas-Empire Pipe Line Co. (Del.)	1,425	1,299
Texas-Empire Pipe Line Co. (Texas)	214	214
Texas-New Mexico Pipe Line Co.	1,318	1,131
Texas Pipe Line Co. (Texas)	4,437	4,213
Texas Pipe Line Co. (Oklahoma	1,232	1,268
Tidal Pipe Line Co.	409	455
Tide Water Pipe Co.	575	1,355
Toronto Pipe Line Co.	145	135
Transit & Storage Co.	297	297
Tuscarora Oil Co., Ltd.	605	605
United Oil Pipe Line Co.	.....	69
Utah Oil Refining Co.	494	.....
Wabash Pipe Line Co.	47	47
Wheeler Pipe Line Co.	6	6
White Eagle Pipe Line Co.	629	.....
Total	98,681	95,919

*As of January 1, 1940. †As of January 1, 1939.

Construction view of the Buffalo to Syracuse gasoline line which was commissioned this month

miles of trunk refined-oil lines. Gathering lines operated by the 64 reporting companies totaled 39,573 miles. The total of 98,681 miles of trunk lines represent an increase of 2,743 miles over 1938, or a little less than 3 per cent. Kansas led with 1,103 miles of added trunk lines; Illinois gained 1,049; Texas, 967; Wyoming, 479; New Mexico, 228; New York, 100; and Utah, 80 miles.

Reductions in mileage were reported in Oklahoma which lost 414 miles; Ohio, 352; Kentucky, 336, and, Pennsylvania, 174 miles. The discontinuance of 336 miles in Kentucky represented 60 per cent of that state's trunk-line mileage reported to the I.C.C.

Gain in Pipe-Line Mileage

There was a comparatively small gain in the total mileage of gasoline or petroleum-product lines in 1939. The increase of 699 miles in trunk product lines was a gain of 1.8 per cent.

The volume of petroleum products handled by pipe lines in 1939 increased to 95,060,468 bbl., a gain of 7 per cent. While product movement by pipe line was increasing 7 per cent, the total crude handled advanced 4.6 per cent to a grand total for last year of 1,228,027,537 bbl. Almost double the 1939 volume of gasoline-pipe-line construction will be credited to the industry at the end of this year. A survey earlier in the year disclosed completion or the start of construction on about 1,100 miles of trunk pipe lines for transportation of refined products. Revenue from petroleum transportation in the first three quarters of this year has increased by the relatively modest margin of 6 per cent while volume of products handled gained 18.4 per cent. Part of this discrepancy between gains in volume and revenue is explained by the expansion of Illinois movement, involving comparatively short hauls to refining centers in the Middle West and on the East Coast. The most striking example of this situation is in the case of the Texas Pipe Line Co., whose volume of movement increased 59.6 per cent and revenue advanced only 23 per cent. The anomalous case of the Texas Pipe Line Co. is based entirely on the shorter hauls involved in moving Illinois crude to refineries of the integrated corporation.

Approximately 15 per cent of the operating revenue of pipe-line companies reporting to the I.C.C. is paid in taxes with more than 10 per cent going to the federal Government. Total taxes paid by reporting pipe-line companies, which represent approximately 85 per cent of the industry, amounted to $31,935,641 in 1939 compared to $34,327,406 in 1938, and $38,562,724 in 1937.

Operating revenues of the companies in 1939 totaled $212,466,138, a decline of 7 per cent from $228,215,055 in 1938. Net revenue from operations, however, declined 12 per cent from $129,453,932 in 1938 to $115,336,272 in 1939.

NUMBER OF BARRELS OF OIL ORIGINATED ON LINE AND RECEIVED FROM CONNECTIONS

Company—	First quarter 1940	First quarter 1939	Second quarter 1940	Second quarter 1939	Third quarter 1940	Third quarter 1939
Ajax Pipe Line Corp.	319,801	1,460,522	531,469	819,861	778,042	853,739
American Liberty Pipe Line Co.	2,865,489	3,533,133	2,344,142	3,591,409	2,110,480	2,578,665
Arkansas Pipe Line Corp.	2,085,735	2,567,379	1,807,678	2,117,040	2,213,018	1,660,609
Atlantic Pipe Line Co.	9,353,805	9,042,241	9,678,756	9,289,102	9,368,694	8,099,085
Atlas Pipe Line Corp.*	1,030,625	853,963	894,847	672,363	793,338	697,513
Bradford Transit Co.	1,314,428	1,790,338	1,985,320	1,722,728	1,739,591	1,860,208
Buckeye Pipe Line Co.	15,628,376	10,887,572	20,598,883	10,130,536	21,683,566	10,749,881
Continental Pipe Line Co.	5,562,162	3,567,443	6,046,146	4,072,428	6,509,249	3,736,730
Empire Pipe Line Co.	4,294,708	3,774,990	4,525,393	4,192,167	4,329,567	3,716,673
Eureka Pipe Line Co.	2,495,967	1,041,576	2,707,447	1,177,714	1,546,252	1,680,193
Great Lakes Pipe Line Co.†	3,712,070	4,393,766	3,707,447	4,896,622	3,831,025	4,517,123
Gulf Refining Co.	20,844,016	17,915,053	21,855,607	17,589,141	21,113,622	18,862,555
Humble Pipe Line Co.	37,298,452	34,424,056	36,681,496	36,254,058	31,444,082	32,232,178
Illinois Pipe Line Co.	24,784,001	16,005,715	25,011,470	18,605,914	21,176,257	22,176,687
Indiana Pipe Line Co.	4,710,625	4,935,431	4,611,372	5,177,915	5,868,177	5,376,446
Kaw Pipe Line Co.	3,868,032	3,192,212	3,396,549	3,326,189	3,896,473	3,172,759
Keystone Pipe Line Co.†	3,195,505	2,794,910	3,487,287	3,815,437	3,992,059	4,145,182
Magnolia Pipe Line Co.	15,968,839	14,279,126	17,727,438	15,849,223	17,089,199	15,315,419
Michigan-Toledo Pipe Line Co.	2,273,999	2,687,362	1,827,862	2,975,803	1,579,929	2,125,894
National Transit Co.	4,284,731	2,778,462	4,687,150	2,712,225	3,313,373	3,128,203
Oklahoma Pipe Line Co.	4,889,235	2,480,046	5,039,487	2,797,744	5,141,969	3,627,705
Pan American Pipe Line Co.	5,081,484	4,878,594	4,921,761	5,097,257	4,983,971	5,527,727
Phillips Petroleum Co.‡	3,994,151	4,238,250	3,947,297	4,028,906	3,973,858	.....
Pure Transportation Co.	4,504,553	4,244,244	4,424,720	4,729,425	4,623,977	3,903,654
Rocky Mountain Pipe Line Co.	963,760	508,406	1,073,011	665,439	1,139,142	708,722
Shell Pipe Line Corp.	14,401,705	14,393,531	12,745,022	12,999,786	12,133,091	12,086,046
Sinclair Refining Co.	17,082,225	16,945,002	15,524,497	17,415,422	16,047,277	16,533,905
Socony-Vacuum Oil Co., Inc.:						
Midland Pipe Line Division	4,612,817	.....	4,925,602	.....	4,306,531	915,092
White Eagle Pipe Line Division	3,070,820	2,368,786	2,352,071	2,616,915	2,850,634	2,261,267
Southwest Pennsylvania Pipe Lines	3,227,134	1,581,763	3,311,682	1,663,107	2,165,769	2,408,932
Standard Oil Co. of Louisiana	11,032,063	9,822,149	10,820,236	10,271,772	9,643,753	10,630,531
Standish Pipe Line Co.	8,693,114	8,231,109	9,344,321	8,032,180	9,727,961	6,710,336
Stanolind Pipe Line Co.	16,520,311	13,487,638	16,470,673	14,505,981	16,238,265	12,983,357
Sun Oil Co.†	620,824	688,505	675,700	968,385	868,494	937,896
Susquehanna Pipe Line Co.†	3,976,013	3,281,100	4,036,179	4,053,778	5,679,957	3,700,002
Texas-Empire Pipe Line Co.	8,078,645	5,075,484	7,572,876	6,923,189	8,269,926	6,383,324
Texas-Empire P. L. Co. of Texas	4,529,252	4,028,873	4,945,552	5,397,436	4,299,016	4,066,266
Texas-New Mexico Pipe Line Co.	5,346,418	4,328,168	5,457,799	4,192,711	5,356,357	4,247,024
Texas Pipe Line Co.	28,298,826	15,625,462	31,499,352	19,173,193	27,304,955	19,750,639
Texas Pipe Line Co. of Oklahoma	2,897,615	2,557,385	3,324,580	2,401,361	1,163,617	3,238,059
Tidal Pipe Line Co.	3,560,519	3,698,322	3,727,927	3,617,528	3,159,208	3,940,759
Tide Water Pipe Co., Ltd.	1,020,435	1,651,405	1,092,864	1,481,512	1,098,000	1,357,956
Transit & Storage Co.	2,013,062	1,889,432	2,436,906	2,130,633	2,793,142	2,281,751
Tuscarora Oil Co., Ltd.†	2,599,226	1,672,544	3,014,366	2,038,734	2,522,969	2,503,130
Utah Oil Refining Co.‡	544,133	.....	694,120	.....	768,179	.....
Total	328,276,706	269,601,511	337,543,625	286,190,269	320,636,011	277,389,824

*Report of trustee. †Company primarily engaged in handling refined products. ‡Operations started as follows: Phillips Petroleum Co., July 1940; Socony-Vacuum Oil Co. (Midland Pipe Line Division), August 1939; Utah Oil Refining Co., October 1939.

SPARKS . . . FROM THE NEWS

GOVERNMENTAL SPEED: An attorney for natural-gas pipe-line interests objected in Washington last week to subpenas from government bodies which give 24 to 48 hours notice to produce records which require 2 weeks to assemble and a truck to transport.

COMPULSORY INITIATIVE: A town-lot play has started in California and another is threatened in which operators can almost certainly count on losing money but in which they must participate or lose their leases. A study of spacing regulations in all states is in order.

ONE DAY'S WORK: Revisions in the present compact, inauguration of a campaign for its continuance and acceptance by all oil states, plans for an expansion in all phases of its activities, and an election of new officers are the only matters which members of the Interstate Oil Compact Commission have to consider at their 1-day meeting in Tulsa next week.

FINE, BUT—: Refiners are making better lubricants at higher costs which last longer and for which their customer pays less. There is something wrong here.

CIRCUMSCRIBED: The average barrel of oil moved by trunk pipe lines is traveling 9 fewer miles because Illinois is nearer a previously famished market.

RESERVE STRENGTH: Fuel oil, a second-stringer product, gives promise of storming the profit goal line which gasoline, Mr. Big of the industry, couldn't dent because of fumbles.

DRY-HOLE INTEREST: Oklahoma's Governor Phillips, chairman of the Interstate Oil Compact Commission, says he has no investment interest in the oil business except a royalty share in a property on which 30 dry holes have been drilled.

BOOMERANG: Petroleum-powered military equipment can be a boomerang. Italian soldiers jump out of their tanks to get some good clean running to the rear but when they are out of breath they find themselves chased by Greeks who took over their tanks.

CART WITHOUT THE HORSE: To base allowables entirely on engineering data without consideration of the relation of a field both to other fields and to markets which might be served by all concerned, is like building a bridge across a river at a point where there are no roads.

CONSOLATION PRIZE: Michigan operators frantically seeking to discover new oil reserves are bringing in gas fields of major importance which may eventually prove of more lasting value. Monday a gas pay below 7,000 ft., deepest in the state's history, was reported.

NO COOLING: Subzero weather in the Dakotas will not cool the ardor of those who after this year's exploratory activities expect to see the drill working at several tests in 1941.

OIL WHERE IT ISN'T: Okfuskee County with 10 new pools and important extensions this year furnishes an Oklahoma example of what can be done through concentrated search in old producing areas, some of which had been condemned for years by dry holes.

PROMISE AID IN DEFENSE PROGRAM . . .

Representatives of the 30,000 members of the Central States Petroleum Union at their annual conference in Indianapolis, Ind., last week promised support to the defense. This successful independent union is composed largely of employes of the Standard Oil Co. of Indiana. The above officers are Fred C. Noechel, Manhattan, Ill., new member of the board of governors; Walter P. Boomer, Indianapolis, president; John A. Harmon, Wood River, Ill., secretary-treasurer; Lawrence J. Catlin, Neodesha, Kans., executive vice president, and Harry E. Deucker, Wood River, vice president of manufacturing

Leasing Campaign in Dakotas Foreshadows Development

BISMARCK, N. D.—One of the great geological basins in the United States, the Lemmon geosyncline in North Dakota and South Dakota, is about to be prospected for oil if the leasing campaign, which has been in progress for the past 2 years, is any criterion. The rumor stage has been reached and one major company is reported ready to drill a test well within the next year.

Companies engaged in gathering leases in the two states have masked the operations of both their land and geophysical departments and only a few companies have taken leases in their corporate names. Residents of the area know what is going on but the oil companies interested would like to obtain results from their exploration campaign before the influx of other major and independent companies starts. Some of the companies are blocking up the territory shown to be favorable by their geophysical and surface geology parties while others are checkerboarding.

The actual number of acres leased is hard to determine, principally because many of the leases are not recorded due to the high fee required. (Recording fees average $4.30 in South Dakota.) Estimates vary from 3,000,000 to 5,000,000 acres with about 3,500,000 acres considered to be the closest to the actual figure. The acreage is divided about equally between the two states.

The area in South Dakota receiving the most attention centers in Stanley, Sully, Potter, Dewey, and Corson counties. In North Dakota, most of the leasing activity has been in Morton, Burleigh, Emmons, McLean, McHenry, and Ward counties. There has been considerable transferring of leases in the state and work of clearing titles is under way in Stanley and Potter counties, South Dakota, with the possibility that these will be the first areas to be tested.

Start of Leasing

One of the first oil men to become interested in the North and South Dakota areas is Thomas W. Leach, geologist of Tulsa. Mr. Leach went into North Dakota several years ago and leased several large blocks. Following the drilling of the California 1 Kemp, in 3-154n-96w, to a depth of 10,281 ft. where it was dry, interest in the state languished. The well was completed in the fall of 1938. In the spring of 1939 several companies investigated the area, the California Co. running a seismograph profile across the state. Some exploratory work was done in 1939 but active leasing did not begin until the spring of 1940.

It is estimated by one scout that Mr. Leach has blocked up about 300,000 acres for himself and others. In South Dakota, R. B. Hipple, of Pierre, has taken several blocks and A. I. Levorsen, H. S. Edge, and W. J. Sherry, all of Tulsa, have blocked up several areas. John Bushfield, Miller, S. D., has been active and Kerlyn Oil Co. of Oklahoma City has several large blocks. Blocks leased by Messrs. Sherry and Hipple have been tested with a stratigraphic drill by the Carter Oil Co. Birkett and Gillespie, Wichita, Kans.; Youngblood and Youngblood, Oklahoma City; O. R. Bennett, Tulsa; A. R. Thompson, Mattoon, Ill., and Dee Brothers of Evansville, Ind., have also been taking leases.

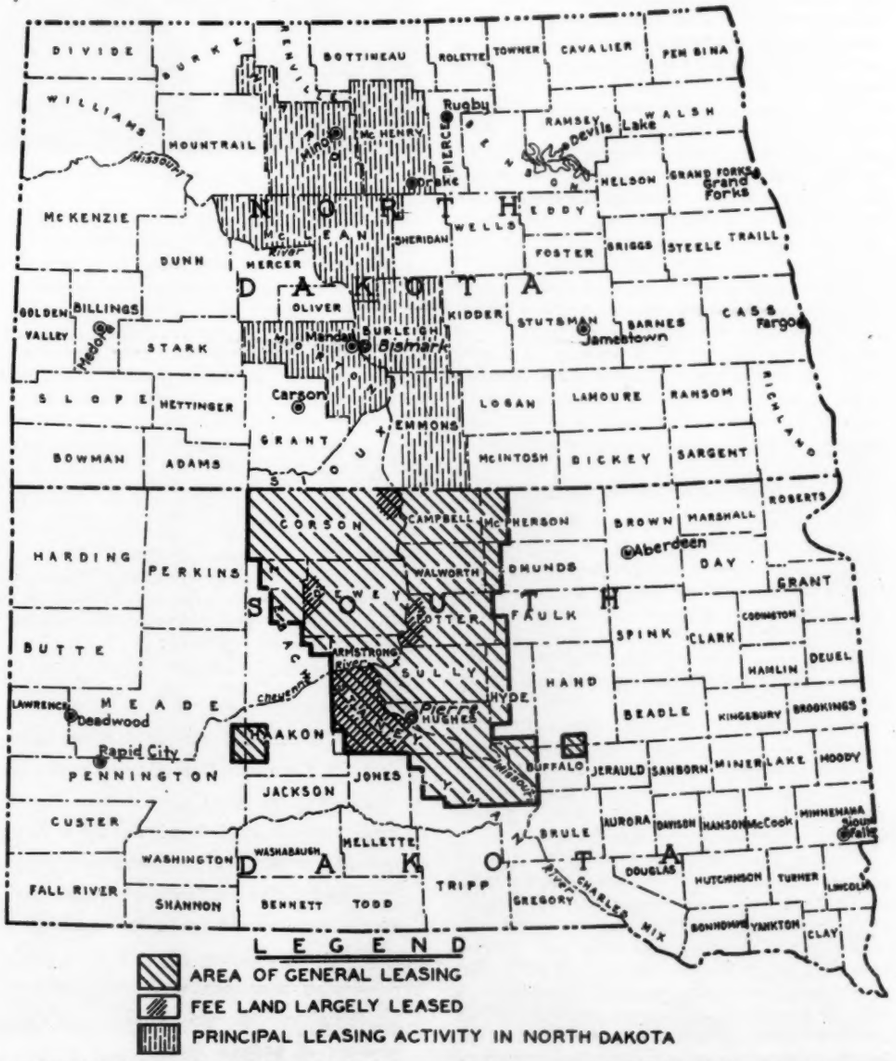
Barnsdall Oil Co., the Murphy Oil Co., and Kerlyn have been taking leases in their own names. Companies maintaining scouts or geologists, or those believed to have agreements with individual leasemen, include Carter Oil Co., Magnolia Petroleum Co., Phillips Petroleum Co., Pure Oil Co., Skelly Oil Co., Sinclair Oil Co., Texas Co., Ohio Oil Co., Yale Oil Co., and Gulf Refining Co. Amerada Petroleum Corp., Stanolind Oil & Gas Co., Shell Oil Co., Inc., Continental Oil Co., Mid-Continent Petroleum Corp., Sun Oil Co., and Derby Oil Co. have all had scouts, geologists, landmen, or working parties in the area. Headquarters for the lease men have been at Pierre and Mobridge, S. D., and Bismark, Mandan, and Minot, N. D.

Prices paid have been reasonable and are generally a dollar per lease with delay rentals running from 10 to 25 cents per acre, although very few have been paying the top price. Tax situation of the farms causes the variation in rental price. The first rental payment does not come due until after 2 years. The duration of the leases is 10 years.

Four Reservations in Area

Both North Dakota and South Dakota have large tracts of state-owned land, some of which is in the areas attracting attention. In addition the U. S. Government has a considerable quantity of land which has never been entered for homestead and also owns land on which grazing permits have been granted. There are four Indian Reservations in the area with some of the land being held by the tribes, some under individual allotments, and some owned in fee by emancipated Indians or individuals who have purchased fee lands from the Indians. Sections 16 and 36 of each township in South Dakota is public school land

(Continued on Page 34)



Map of North Dakota and South Dakota with shaded areas showing counties in which leasing has been in progress

Coming Months Critical Period For Interstate Oil Compact

By HAROLD B. FELL
Executive Vice President, Independent Petroleum Association of America

THE next few months may determine the future course, even the existence, of the interstate oil compact.

It is gratifying to the many who have believed that the compact held the solution of many of the problems of the oil industry to note the effort which the Interstate Oil Compact Commission now appears to be making to vitalize the basic character of the compact. The commission has recently appointed certain committees to do specific work and the understanding is that such work will be done with all possible dispatch.

There has been considerable criticism within the petroleum industry of the interstate oil compact. That criticism is currently being heard. It is well that such is the case. Most of the comments indicate disappointment that the compact has not fulfilled the high hopes that were held for it when it was organized in 1935, and they indicate further a desire that the Compact Commission take such steps as are needed to make effective the joint conservation activity of the oil-producing states. In other words, most of the members of the oil industry are still hopeful of success on the part of the compact.

In this discussion the writer assumes only to restate the expression of the Independent Petroleum Association of America, given on October 18, in Dallas, Tex., on the occasion of the annual meeting of the association. Through the committee of 29, appointed more than 2 months earlier, a study had been made of the work of the Compact Commission and of the state regulatory bodies.

This study resulted in a report, which was unanimously endorsed by the membership, and that endorsement was followed by a resolution which urged the continuance of the compact. It is pertinent here to quote from the report of the committee of 29. After a statement of recognition that the compact had already resulted in a better understanding of the conservation problems, the report said:

Makes Plea for Support

"We feel that the petroleum industry is very greatly affected by the work of the Compact Commission, and we are of the opinion that the industry has failed to understand fully the possibilities of accomplishment that are already provided by the terms of the compact and has not availed itself of the opportunity of lending that degree of support and assistance that was contemplated by Congress and legislative bodies of the states.

"We feel that with continued support of this and other similar associations, the several oil-producing states can and will more effectively balance production with consumer demand and that each state will be content to limit its production to a quota in keeping with current requirements.

"As a result of this situation within the industry and probably because of the lack of appreciation of the opportunity and responsibility on the part of the compact officials, themselves, we feel that they have not functioned as fully as is possible under the provisions of the law and that many activities not heretofore employed should be used to make the work of the Compact Commission more effective in the prevention of physical waste and in the conservation of our natural petroleum resources."

H. B. FELL

At this point, it is appropriate to say that the grounds for the self-criticism set forth in the first of the above quoted paragraphs is in process of being removed. By authority of the members, the president of I.P.A.A. is at this time appointing a committee which will consist of one or more members of the association from each oil-producing state. The function of this committee will be to keep in touch with the Compact Commission, to observe its progress and to collect and make available to the Compact Commission all information that will tend to help it in its work. Thus, one large segment of the oil industry has a definite plan for aiding the Compact Commission and for doing all it can to enable the compact to achieve the purpose for which it was originally destined.

In the report of the committee of 29, certain definite recommendations were made which can be carried out only by the Compact Commission. These may be summarized as follows:

1. The Compact Commission should make a continuous study of conservation laws, rules and methods, so that all facts which pertain to waste prevention and true conservation may be available at all times to the industry and the oil-producing states.

2. The Compact Commission should set up a permanent organization, headed by an individual fully qualified by training and experience. Such organization would be the medium through which the Compact Commission would make the continuous study of the conservation program, "including," said the report, "but not limited to a study of drilling and producing practices, total demand for products of various kinds and all sources of supply thereof."

In this article the author recommends that the Compact Commission make a continuous study of conservation laws and methods, and that it set up a permanent organization, headed by a qualified individual, through which the commission would make the study, including, but not limited to, drilling and producing practices, total demand for products of various kinds and all sources of supply thereof.

Need Experienced Director

These are definite, but at the same time, broad recommendations. Within them, the program of the Compact Commission can be formulated. As said, the Compact Commission has recently appointed committees to make certain studies. Their reports will supply the basis for future activity and that activity can be carried on best if the machinery of personnel is established. The members of the Compact Commission are busy men and have only a small amount of time to give to the greatly enlarged program that will be necessary to carry out the declared purposes of the compact.

Hence, the recommendation of I.P.A.A. was made that an experienced director with an adequate staff be employed. Up to now, the work at the compact headquarters has been chiefly secretarial. What the I.P.A.A. had in mind was the employment of a director who would possess that intimate understanding of the problems of conservation that would enable him to give point and purpose to the Compact Commission's activities.

What should those activities be? The writer here would seek to amplify the recommendations of the I.P.A.A. and make certain suggestions which, in part, reflect the views of others who have displayed deep concern for the future of the interstate oil compact. The persons who are most earnest about the preservation of the compact are those who prefer, for very practical reasons, to see all the conservation problems solved by agencies which are native to the oil-producing areas. They feel that such agencies are by reason of their environment more closely attuned to the practicalities of the problems whose solution certainly should be accomplished with the minimum of confusion and expense to the oil operator.

It is the belief of many that the Compact Commission has not exercised the power of critical study which its charter confers on it. In Article VI of the agreement which was approved by Congress and the legislatures of the member states, the commission is authorized to make recommendations to the state authorities. That power has been little used. Its proper exercise can be beneficial.

Secondly, the Compact Commission has within its grasp the means of ending many of the popular misconceptions concerning the oil industry. The public is told, over and over, in various ways, that the oil industry is committing great and flagrant waste—recklessly throwing away the oil and gas resources of the nation. The industry

itself has done something to reply to such charges, but it is in the position of being arrayed against persons in public positions and their voices have at times been the loudest. There is no concerted move by the states to defend themselves and their laws and practices against the accusations frequently made. It is to the interest of the states to make such defense. Nearly all of the principal oil-producing states have made great progress in legislating to prevent waste and they continue to improve their practices. Yet, it is the other story—the story of faithless guardianship, of tremendous waste, of early exhaustion of oil and gas supplies—

(Continued on Page 32)

Tulsa Meeting to Consider Vital Compact Changes

ONE of the most important meetings in the history of the Interstate Oil Compact Commission will be held in Tulsa, December 6, according to an announcement by Gov. Leon C. Phillips of Oklahoma, chairman of the commission.

Reports of a specially appointed committee which has been considering provisions for a new compact and recommendations from permanent committees looking to wide expansion in the compact's future activities, will receive consideration at the Tulsa meeting. Members of the commission are hopeful that final plans can be agreed upon as to revisions in the present compact which expires September 1, 1941, and arrangements completed to bring about its continuance through action of federal Government and the oil states. Particular attention will be given to the problem of securing ratification of a new compact by oil states which are not members of the present compact.

J. C. Hunter, president of the Mid-Continent Oil and Gas Association, is chairman of the committee which will prepare and present the draft of the new compact. Other members of the committee are Hiram M. Dow, of New Mexico, and Andrew F. Schoeppel, a member of the Corporation Commission of Kansas. All members of this committee are members of the Compact Commission and have been active in its work.

While there have been indications as to changes that this committee will suggest in a new compact among the oil states and the federal Government, it is known that consideration is being given to new provisions which would enlarge the present scope of activities. One proposal would give the commission power to prorate crude markets among the states on a basis of estimated demands for the crude. At present the Bureau of Mines estimates crude demands but the enforcement is left to the action of the individual states.

It has also been suggested that the budget of the Compact Commission be enlarged to provide for a larger staff. Since the Compact Commission was created in September, 1935, the limited funds for its operations were made available by the Conservation Division of the Oklahoma Corporation Commission. The paid staff is confined to a secretary and an assistant. Headquarters are located in a small office in the Capitol Building. Provision has been made for special legal representation.

An enlarged staff probably would provide for economic and engineering departments and other members who would devote their time to field and office work. Particular emphasis has been placed on the necessity of an engineering department to carry on investigations and make recommendations which would bring about greater uniformity among the states in regard to conservation practices in the production of crude oil.

It is also felt by some that the Compact Commission should also carry on economic studies and be prepared to make recommendations as to oil supply and demand trends to the membership. Should this enlarged program be approved it is assumed that the expenses for carrying on the work of the compact after September 1, 1941, will be prorated among the oil states which become members.

The legal committee, according to Governor Phillips, will submit a model oil-and-gas conservation law to be recommended to all producing states. The committee on regulatory practices will submit model rules and regulations for enforcement of state conservation laws. The engineering committee will make a preliminary report on uniform proration practices in conservation.

Committee Personnel

All of these committees have held meetings in recent weeks. Some of the recommendations that will be made at the Tulsa meeting have been under consideration for 2 or more years. Following is the personnel of the three committees:

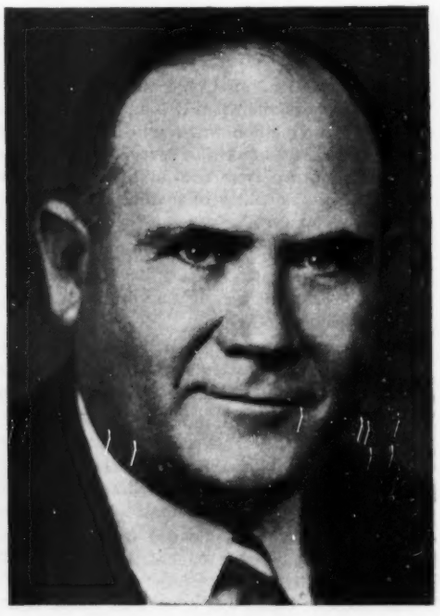
Legal committee.—Earl Foster, conservation attorney, Corporation Commission, Oklahoma City, Okla., chairman; Warrick M. Downing, Denver, Colo.; Harold Medill, attorney, Kansas Corporation Commission, Topeka, Kans.; P. J. Hoffmaster, director, Department of Conservation, Lansing, Mich.; Carl B. Livingston, Santa Fe, N. M., and R. E. Hardwicke, Fort Worth, Tex.

Engineering committee.—Dr. W. H. Carson, dean, school of engineering, University of Oklahoma, Norman, Okla.; Dr. F. N. Van Tuyl, Colorado School of Mines, Golden, Colo.; Dr. Eugene A. Stephenson, University of Kansas, Lawrence, Kans.; Lee S. Miller, Department of Conservation, Lansing, Mich.; A. Andreas, state geologist, Santa Fe, N. M.; and Dr. E. DeGolyer, consulting geologist, Dallas, Tex., chairman.

Committee on regulatory practices.—W. J. Armstrong, conservation officer, Oklahoma City; H. C. Bretschneider, Denver, Colo.; T. A. Morgan, director, Department of Conservation, Kansas Corporation Commission, Wichita, Kans., chairman; F. R. Frye, Department of Conservation, Lansing, Mich.; Carl B. Livingston, Santa Fe, N. M., and Olin Culberson, Railroad Commission of Texas, Hillsboro, Tex.

GOV. LEON C. PHILLIPS
Chairman, Interstate Oil Compact Commission

ANDREW F. SCHOEPPEL
First vice chairman, Interstate Oil Compact Commission



J. C. HUNTER
Chairman, committee for drafting new compact

The Balco gasoline plant, near the Dill-Cromwell areas, southwestern Okfuskee County, Oklahoma

New Pools and Extensions Bring Revival to Okfuskee County

OKEMAH, Okla., Nov. 19. — Okfuskee, one of the older oil-and-gas-producing counties in Oklahoma, has been a happy hunting ground for the wildcatters of 1940, with some 10 outpost tests opening new pools or extending proven fields. The discoveries have resulted in a revival of drilling activity and exploration throughout the county, which is leading the state in field operations, both in proven and wildcat areas.

The 6-year-old Dill pool has been extended several times by big producers and its limits are yet to be determined.

A townsite drilling program has been started at Weleetka.

Two productive areas have been opened to the northeast of the old Cromwell field of Seminole County, and future developments may connect them.

Several pools have been opened in the Okemah district and townsite development at Okemah is a possibility of the near future.

Eleven active wildcats are listed in this week's field report, and some of them give promise of opening additional pools.

Such a record of discovery and activity is all the more remarkable when it is remembered that oil and gas production was found near Weleetka as far back as 1913 and that several of the larger pools were opened from 1920 to 1924, a period in which there was intensive drilling and exploration in the county.

Recent discoveries in Okfuskee County include:

Haydenville district, opened by Broswood Oil Co. and Lease Investment Co. in 21-13-10, and Martin, Westby & Green in 28-13-10.

West Weleetka pool, opened by Summitt Drilling Co. and Paul McIntyre in 18-10-11; initial production of 746 bbl. daily from Booch sand at 2,294-2,310 ft.

East Okemah pool, opened by C. A. Yoakum and Phillips Petroleum Co., in 11-11-10; initial yield 75 bbl. daily from Cromwell sand at 3,140-76 ft.

North Cromwell pool, opened by C. W. Titus in 26-11-8; initial yield 105 bbl. from Cromwell sand at 3,478-3,501 ft.

East Cromwell pool was opened by Reese Drilling Co., in 36-11-8, and flowed 552 bbl. through tubing in 24 hours from Cromwell sand at 3,462-76 ft.

Mason pool, opened by Burke-Greis Oil Corp., in 9-12-9; flowed 85 bbl. of distillate, with gas increasing from 3,000,000 cu. ft. to 10,000,000 cu. ft., from Hunton lime at 3,890-3,936 ft.

North Okemah pool, opened by Texas Co., in 5-11-10; initial yield 243 bbl. in 10 hours from Hunton lime, plugged-back depth 2,719 ft.; total depth 3,916 ft.

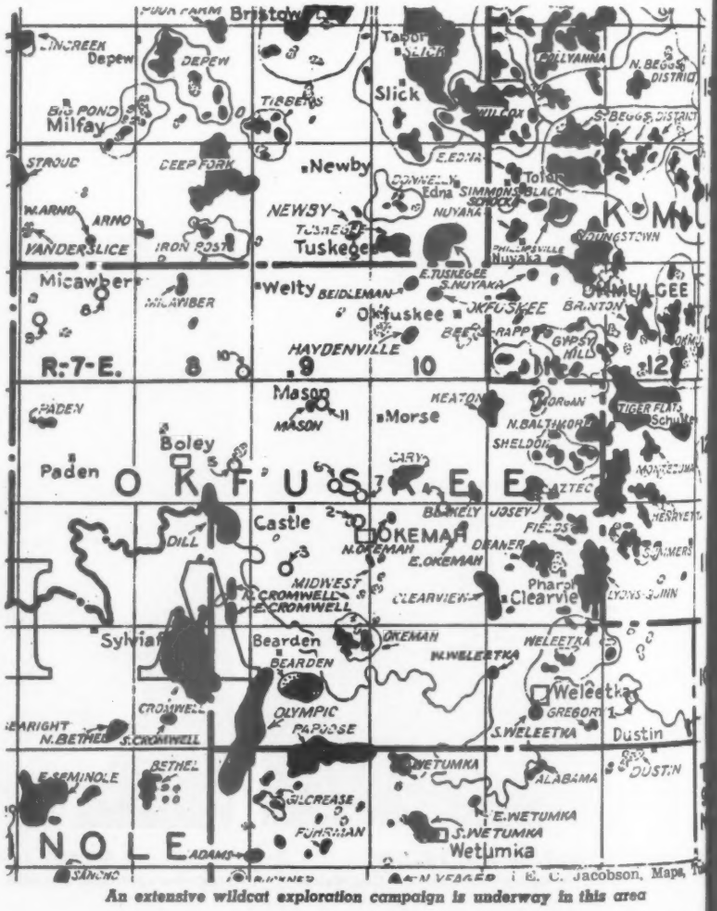
Okemah pool, extended by Paul McIntyre at 1-A McMahon, NW NW SE 36-11-9, initial production 94 bbl. daily from second Wilcox sand.

Okemah area, gas pool, opened by C. A. Yoakum and others in 34-12-9, producing 7,000,000 cu. ft. of gas from sand at total depth of 3,826 ft.

Since completion of the discovery wells, extension producers have been completed in some of the new areas as well as in old fields.

Foremost among the extensions were those in the Dill pool, which was extended northward in Okfuskee County, northwestward across a corner of Seminole County and back into Okfuskee.

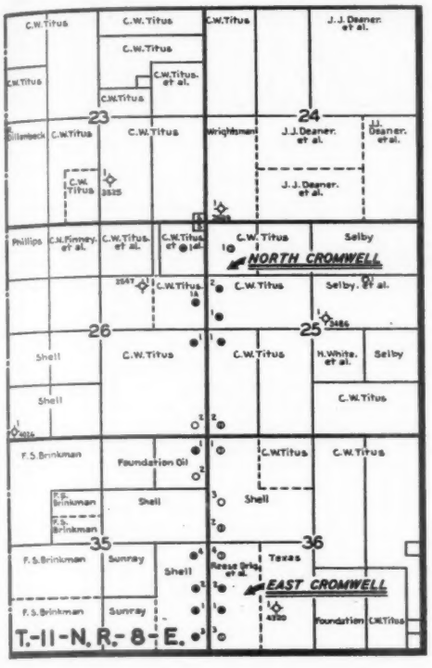
The Dill pool was discovered in August 1934 at Carter Oil Co. 1 Dill, C NW SE 2-11-8, on an anticline. Elevation of the discovery well was 818 ft. Average elevation is 820 ft. The discovery well had initial yield of 388 bbl. of oil in 24 hours, a total depth of 3,408 ft. Subsequently, both Hunton and Cromwell formations were proven productive, average depth of the pay horizon being 3,350-3,600 ft. Gravity of the oil averages 40°. Pipe-line outlets are provided by the Gulf and Shell companies. Slow and orderly development followed completion of the discovery well, with Cromwell sand tests being drilled on 10-acre units and Hunton lime tests on 40-acre units. The early development was confined principally to 2 and 11-11-8, production apparently being cut off to the north by a series of dry holes. In 1939

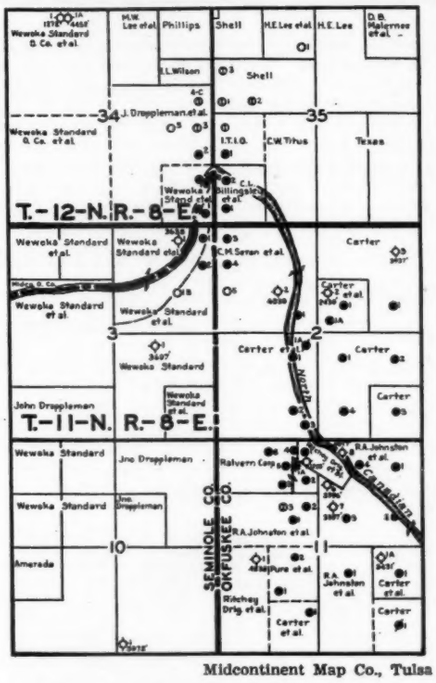


An extensive wildcat exploration campaign is underway in this area

only five tests were completed, three oil wells and two dry holes. It looked like the story at Dill had about been told.

John Droppleman and the Wewoka Standard Oil Co. would not be stopped by a few dry holes. In May 1940 they completed 1 Gahagan, NE NE NE 3-11-8, extending the pool about ½ mile northwestward and into the northeast corner of Seminole County. It flowed 771 bbl. of 37-gravity oil in 4 hours through perforations in Wapa-





Midcontinent Map Co., Tulsa

North and East Cromwell, left, and Dill pool are being developed rapidly

nucka-Cromwell zone at 3,545-60 ft., and on completion test flowed 800 bbl. through ¾-in. choke in 24 hours.

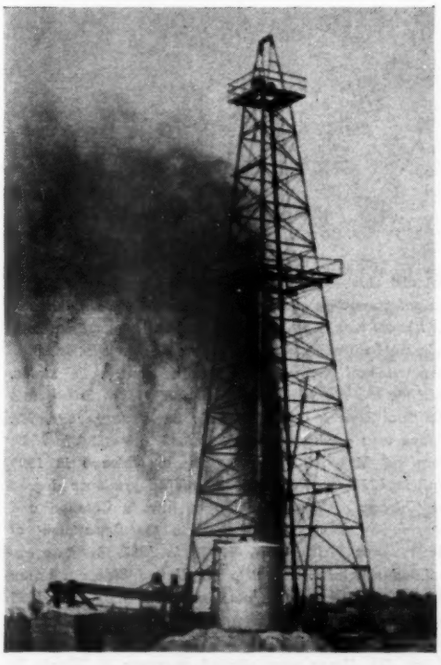
Since then several big wells have been completed in the extension area, which cut across Seminole County and back into Okfuskee. The producing area has been extended northward several times, location by location, and as yet there is no indication as to the limits of production. Recent completions include wells with initial daily yields of 1,000 to 3,000 bbl. Operators active in the new development include Droppleman, C. M. Seran, Shell Oil Co., Inc., I. T. I. O., Wewoka Standard Oil Co., and others.

The 36 producing wells listed in the Dill pool on Corporation Commission records had pipe-line runs totaling 54,900 bbl. in September, an average of 1,830 bbl. daily. The daily allocation was only 856 bbl., but producers have been so large and completed so rapidly in recent months that production soon passed the allocation, which was increased to 1,000 bbl. in October.

The Cromwell Area

The North and East Cromwell pools, south of Dill, are among the busier areas in the county and are being developed more rapidly than some of the other new Okfuskee pools. Linking of the pools was indicated in October, when Foundation Oil Co. completed 1 Berryman, NE cor. 35-11-8, for 75 bbl. of oil daily at total depth of 3,420 ft. Production has been found in Booch, Gilcrease, and Cromwell zones. While the wells have not been as large generally as those at Dill, some wells with initial yields of 1,000 to 1,500 bbl. have been completed. Ten-acre spacing prevails. The productive limits of the two pools seem to have been defined in part by dry holes, but considerable drilling remains to be done before the proven area is developed or exact size of the field is known.

The Weleetka district, with its several pools, probably will be an active area for many months to come. At the moment, the townsite development is outstanding. About mid-September, Doak & Hughes completed a well in the Leach pool at 2 Lowe, SE SE NE 16-10-11, on the northwest edge of the townsite. It flowed 575 bbl. of oil the first 16 hours from Booch sand at 1,890-1,911 ft., with 5,000,000 cu. ft. of gas. Gas declined rapidly and it was completed on the pump. East and south offsets, both on the townsite, were started, and the operators were reported planning to drill eight additional townsite wells.



Seran well at Dill, flowing 150 bbl. hourly

Ten-acre spacing was ordered for the Leach pool, just northwest of Weleetka, by the Corporation Commission in October 1939, for wells drilled to several separate common sources of supply, including Salt sand, Gilcrease sand series, Booch, Cromwell and Jefferson sands, Hunton lime and Wilcox sand. With the extension of the pool onto the townsite, a new order was issued last September 23 to comply with city ordinances and setting up unit drilling blocks averaging about four city blocks to the location. Doak & Hughes, who have leases on practically all of the north part of town, plan conservative development. The wells in the adjoining Leach pool are comparatively small producers, but production comes from both Booch and Cromwell sands and is long lived. Several horizons in the general area are productive, but irregular.

An Early Discovery

The Weleetka field, northeast of town, is the oldest recorded producing area in the county. Opened in 1913, it includes several small oil and gas pools, mostly in Township 10n-11e, in a faulted, folding region. This old area was revived in 1926 and 1927, when deeper production was sought, and now seems to be in line for another period of exploration and development.

Development will continue in the North Okemah and East Okemah pools, as well as in other areas around the county-seat town, until productive limits have been determined. In seeking a 20-acre spacing order for the North Okemah pool recently, the Texas Co. indicated that the pool probably would cover parts of 5, 6 and 7 and all of 8-11-10e. As the cost of drilling and equipping wells in the area is approximately $22,500 each, the company held that 20-acre spacing was desirable and would permit drilling and operation of the leases so that maximum ultimate recovery might be obtained.

The other new pools that have been discovered this year will come in for their share of the drillers' attention during the next year. Already, work has started in the Mason pool, about 9 miles northwest of Okemah. Burke-Greis Oil Corp. 1 Rose, NW NW NW 10-12-9, second test to be started in the pool, is an east offset to the distillate-gas discovery well. It is shown as No. 11 on the accompanying field map. Wilcox production is the goal, but if oil is not found in that horizon it may be completed in Hunton lime as another distillate-gas well. The discovery was dry in Wilcox sand.

Wildcats at various stages of drilling are located in nearly every part of the county. Some of these already have given evidence of opening oil or gas pools. Numbered as shown on the field map, they are:

1. W. O. Carte 1 Bucco, NE NE SE 20-10-12. Had Salt sand at 762-871 ft., estimated 1,000,000 cu. ft. of gas, total depth 875 ft., set 8-in. casing at 874 ft., waiting; to drill ahead in search of oil.

2. Portable Drilling Co. 1-A Nelson, NE SE SW 1-11-9. Drilling around 3,000 ft.

3. Fred Coogan 1 Davis, SW SE NE 20-11-9. Set 10-in. casing at 220 ft., to drill ahead.

4. W. B. Pine 1 Armstrong, SE SE NE 3-11-10. Dutcher 3,122 ft., Wapanucka 3,162 ft., Cromwell 3,260 ft., sand 3,345-55 ft., total depth 3,380 ft., set 7-in. 3,308 ft., shot in open hole at 3,325-30 ft. and perforated with 50 holes at 3,121-28 ft., flowed 25 bbl. of oil in 10 minutes and died; both oil and water in hole; to plug back.

5. J. O. Hayes Drilling Co. et al 1 McKernan, E½ SE NW 25-12-8. Wapanucka-Cromwell 3,535 ft., Hunton 4,050 ft., drilled by pipe at 3,660 ft., plugged back and waiting.

6. Davon Oil Co. 1 Sporleder, C SW NW 35-12-9.

(Continued on Page 34)

STATE CAPITALS...

OKLAHOMA

OKLAHOMA'S ALLOWABLE OIL PRODUCTION was set at 390,000 bbl. daily for the period of December and January by the Corporation Commission on Tuesday. This was the same figure as in November, and is 32,600 bbl. daily under the estimated market-demand figure set by the Bureau of Mines for December. W. J. Armstrong, conservation officer of the commission, said the principal reason for fixing the allowable for 2 months was to avoid the necessity of having a hearing during the Christmas holidays.

Changes in the field allowables approved by the commission were as follows (in barrels):

Increases.—Deep Frederick 250, Cement 343, Dill 1,000, Earlsboro-North Wilcox 257, East Cromwell 500, Prague 500, and Hobart 1,000.

Decreases.—Hazel 38, Lucien 250, Moore 150, Olympic 215, Fitts-Cromwell 100, Fitts-Hunton 200, Fitts-Upper Simpson 450, Meridian 30, Dora 150, Doyle-Deese 121, Earlsboro-North Hunton 71, Fox Deep 100, West King 125, Naval Reserve 300, and Oklahoma City-Pawhuska 100.

TEXAS

THE TEXAS RAILROAD COMMISSION Tuesday issued a 60-day proration order limiting the state's crude-oil production for December and January to 1,316,657 bbl. daily. The new allowable is 39,657 bbl. daily above the Bureau of Mines estimated demand for 1,277,000 bbl. daily from Texas during December. Under the expiring 90-day order Texas allowable was 1,311,721 bbl. daily and production for the week ended November 23 is estimated at 1,512,850 bbl.

WHETHER A NEW REGULATORY BODY will be formed to take over the present duties of the Railroad Commission continues to arouse discussion among Texas operators. Although such a move has been discussed at various times in past years, the most widespread supporting movement took place earlier this month when several oil and gas associations passed resolutions favoring the formation of a new commission. Generally, though, it is believed that there will be little other action until after January 1.

Originally formed as a three-man body to control rates and hauls of railroads, the Railroad Commission in 1919 was vested with the power of preventing physical waste of oil. Then when the East Texas field presented such a regulatory problem, the "market demand" statute was passed by the legislature empowering the commission to control oil and gas production to the extent of preventing physical waste.

The entire question which was dealt with indirectly at the past state-wide hearing and at present in the spotlight by many Texas independent associations is, "can the present Railroad Commission better control production under some other than the market-demand system, or, if not, can a new and separate regulatory body better control the oil production, either under a new system or under the old market-demand statute?"

It is a conceded fact that the Railroad Commission is greatly overburdened. It is also conceded the commission must base all of its proration orders on the assumption that it is solely attempting to prevent physical waste. The commission was not originally vested with the power of actually regulating production, but rather only as that regulation pertained to physical waste, market demand, production in other states, and pipe-line connections and capacities.

Regardless of whether many or any other associations subsequently announce favor, one way or the other, no results can be expected before the first of the coming year. The Texas Legislature convenes in January and a bill will have to be drawn up and presented before that body.

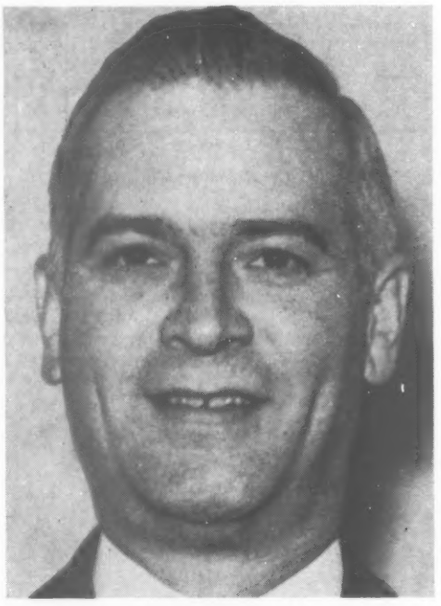
Another factor which may effect the introduction of such a bill is that many Texas producers and oil men are awaiting the effect of Olin Culberson's entering into the Railroad Commission. He was elected this fall to succeed Lon Smith and will take office the first of the year.

TEXAS' ALLOWABLE PRODUCTION gained 6,368 bbl. daily during the past week to 1,318,018 bbl. daily, the Oil and Gas Division of the Texas Railroad Commission reported on Saturday. The average daily permitted flow was 27,000 bbl. above the Bureau of Mines estimated market-demand figure of 1,291,000 bbl. However, with underproduction of allowables figured at 3 per cent, the daily production would be placed at 12,454 bbl. under the bureau's figure.

The increases last week were attributable almost equally to addition of new wells to the schedules and a few small field increases. The basic allowable rose 5,317 bbl. to 1,762,947 bbl. while the net average after deduction for 9 shutdown days rose 3,724 to 1,234,065 bbl. Daily average production of oil exempt from the 9 shutdown days gained 2,644 bbl. to 84,024 bbl.

Daily average allowables in the various districts and the change from last week were, in barrels: Southwest Texas, 213,533, up 2,113; Gulf Coast, 226,244, up 2,201; East Texas, 266,367, down 127; East Central, 78,235, up 193; West Central, 50,503, down 75; West Texas, 201,926, up 745; North Texas, 117,834, up 1,200; and Panhandle, 63,022, up 118.

OIL-STATE GOVERNOR-ELECT . . .



DWIGHT H. GREEN

Illinois' Gov.-elect Dwight H. Green stated during his recent campaign that every phase of the oil industry in Illinois would be investigated by a nonpartisan commission before he would approve any legislation dealing with oil regulation. The oil industry, he states, touches too many people in Illinois to be thrown into politics. Born in Ligonier, Ind., in January 1897, Mr. Green was graduated from Stanford University in 1919, received his Ph.B. at University of Chicago in 1920 and in 1922 received a doctor of jurisprudence degree at Chicago. After practicing at law in Chicago and serving as a special attorney in the Department of Revenue at Washington, D. C., in 1927, he was appointed special assistant to the United States attorney for the northern district of Illinois. From 1932 to 1935 he served as United States district attorney in the northern Illinois district. Running on the Republican ticket, Mr. Green was elected governor of Illinois in the November 5 election

ILLINOIS

STATE REP. ORA P. TUTTLE, of Harrisburg, Pa., chairman of the Illinois Oil Investigating Commission, has called a meeting of the group for December 2 at the LaSalle Hotel in Chicago to prepare a report for Gov.-elect Dwight H. Green for use in his message to the legislature and for his guidance in preparing a legislative program. A tax on oil and proration are still the outstanding questions before the commission, Mr. Tuttle said.

The committee call has been approved by Governor-elect Green, who said during the recent election campaign every phase of the petroleum industry in Illinois would be investigated by a nonpartisan commission before he would approve any legislation dealing with oil regulation. He said he would "block" any attempt to make oil regulation a "political football."

The sixty-second general assembly will convene January 7, and Governor-elect Green will be inaugurated January 13.

CALIFORNIA

THE CALIFORNIA CONSERVATION Committee at its regular monthly meeting decided to hold the December allowable crude-oil production at the November level of 571,000 bbl. per day. For the first time since the present uniform allocation formula was put into effect on June 1, 1939, no change was made in the allocation to intermediate wells. Because the net reduction is so small, the entire curtailment of production during December 1940 will fall on 938 top producers. Maximum production for top wells was reduced from 151 bbl. daily which prevailed during November to 149 bbl. daily for December. The committee pointed out, however, that action taken with respect to December allotments was not establishing a precedent and that the relative balance between classifications of wells would be maintained in the future.

There was considerable discussion of curtailment at Kettleman Hills with some hope expressed that a new agreement under discussion might lead to lower production levels there. A lower completion rate with the resultant smaller yield of new oil in December, coupled with the normal natural decline and suspension of present wells led to the decision to confine the cut to but one classification of wells for December.

Allotment required for new and recompleted wells in December is estimated at 8,324 bbl. per day compared with the usual average of approximately 12,000. Natural decline and suspensions will account for 5,900 bbl. of this figure, leaving a net addition of but 2,424 bbl. daily. The reduction in top allowable will result in a cut of 1,876 bbl. per day, and the remainder, 548 bbl. daily, will be added to the allotment, bringing it to 569,230 bbl., well within the 571,000 bbl. maximum.

LOUISIANA

THE LOUISIANA CONSERVATION DEPARTMENT announced Monday the state's December oil allowable would permit flow of 287,248 bbl. a day, a gain of 7,275 bbl. daily over November allowable. The new allowable is 6,948 bbl. a day over the Bureau of Mines recommendation for December. Pools in South Louisiana will be allowed a total yield of 221,497 bbl. a day to 65,751 bbl. daily for those in North Louisiana.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

The Matter of Equity

Preparations for the highly important meeting of the Interstate Oil Compact Commission next week and developments at the recent hearing of the Texas Railroad Commission again reveal a lack of understanding of the essential part that proration must play in petroleum conservation.

A few operators apparently feel that the application of regulations should end when engineering practices which have to do with elimination of physical waste have been worked out. They look upon recommendations as to divisions of markets and the restriction of production to demand as side issues which have no proper place in a conservation program.

This attitude accounts for most of the enforcement troubles of several oil states and it is the most important explanation of why market trends are unsatisfactory.

Any study of controlling factors involved in this situation, including a consideration of the many exhibits of failure and success, will show that the technical and economic problems of conservation in this industry are intermingled and must be considered together.

Control of production, grounded entirely on engineering criteria without regard to the allocation of markets, will not work and a general recognition of that fact is needed as plans are inaugurated to vitalize and expand the work of the Compact Commission and the state regulatory bodies.

Proration received the approval of operators and the courts, starting 15 years ago, because it sought to minimize waste in the production of an irreplaceable resource and at the same time provided for a more equitable distribution of oil in place.

It was early realized that operations under proration meant the building up of supplies underground in excess of immediate requirements. This in turn necessitated ratable takings by leases and fields and a consistent balance between current supply and demand for the entire industry.

The continuance of conservation under any other plan is unthinkable.

In Texas and other points there developed the abortive theory that if any operator found a new outlet for his oil and could produce it without physical waste, he was entitled to the additional demand regardless of the consequences to his neighbors and the industry generally.

From this has grown the vicious practice of special allowables and shutdown exemptions in Texas where 40 per cent of the nation's crude oil supply originates.

As a result, in that state, output has fluctuated widely, overproduction has often been serious, markets have reflected the worst instead of the best in statistical conditions, so that the constructive efforts of those who have abided by the rules and were content with their pro rata share of the market have been largely nullified.

To illustrate the fallacy of this procedure, suppose that a half-dozen East Texas fields should be found over the next 2 years at scattered points throughout the United States. Their rapid development would mean that they would take over all the markets of this country. The existing producing branch of the industry would fold up and billions in property values would be permanently destroyed and wasted.

This is an exaggerated example but it points to the unsoundness and the inevitable consequences of the recent petty quibbling in regard to the divisions of markets in a few fields.

This situation will continue and become more disturbing, ultimately defeating all the ends of conservation, unless there is a complete acceptance of the basic fact that the rules of equity in pool development must apply not only to the oil underground but also to the market distribution after it reaches the surface.

1941 Lucas Medal Awarded To Schlumberger Brothers

MARCEL SCHLUMBERGER, jointly with his brother, Conrad, who died in 1936, has been awarded the Anthony F. Lucas Gold Medal for 1941 by the American Institute of Mining and Metallurgical Engineers, according to announcement by A. B. Parsons, secretary of the institute.

The medal is awarded to recognize "distinguished achievement in improving the technique and practice of finding and producing petroleum." The award for 1941 was made on recommendation of a special committee of 16 leaders in the petroleum industry, of which Joseph Jensen, of Los Angeles, Calif., chief petroleum engineer for the Tide Water Associated Oil Co., is chairman. Previous recipients of the medal have been: J. Edgar Pew, vice president, Sun Oil Co., Philadelphia, Pa.; the late Henry L. Doherty, president, Cities Service Oil Co.; and E. DeGolyer, consulting petroleum geologist, of Dallas, Tex.

Marcel Schlumberger

Conrad Schlumberger

The award to the Schlumberger brothers recognizes their pioneer work in developing methods for the electrical "coring" or "logging" of oil wells. The devices and methods originated by them have substantially changed the producing practice throughout the world. They have now become one of the most important tools of the engineer studying subsurface geology and they have revolutionized the ideas of engineers as to underground formations. The utility of shotgun perforation, stage cementing, and other procedures important in modern oil-well operations is largely based on the successful application of the Schlumberger methods.

Conrad Schlumberger first engaged in electrical subsurface exploration in France as early as 1910, when he was professor at the School of Mines in Paris. About 1920, Marcel Schlumberger, who has been engaged in mining and other engineering activities, joined his brother, and they cooperated closely on the development of their methods after that time. Later their technique was introduced into the United States and other countries, and today it is in general use throughout the world.

Conrad Schlumberger was born in 1878 at Guebwiller, a small Alsatian industrial town. After his military training, he entered the National School of Mines in Paris as student with the National Mining Corps. He graduated as engineer in this mining corps in 1904 and was sent on duty at Rodez and then at Toulouse. In 1906 he became professor at the National School of Mines at Saint-Etienne, and in the following year he obtained the same chair at the School of Mines in Paris. It was in the laboratory of this school that he started, around 1912, his first research on the distribution of electrical currents in the earth.

Marcel Schlumberger, 6 years younger than his brother Conrad, was born in the same town of Guebwiller in 1834. He began his studies at Carnot College first and then at Jason-de-Sailly, and in 1904 he entered l'Ecole Centrale des Arts et Manufactures (National School of Arts and Crafts). Three years later he graduated from that school with the title of engineer. Being of very inventive nature, he concentrated his studies on technical research. He became technical adviser for the following companies: Societe Ottomane d'Heraclee, Societe Francaise des Mines de Bor, de la Compagnie des Mines d'Ouasta et de Mesloula, Societe d'Etudes de Locomotion Aerienne and Societe Franco-Russe des Ciments de Guelendjik.

After the war he resigned from his former connections and became associated with his brother with whom he worked exclusively on electrical prospecting.

A.P.I. Appoints Five Regional Committees for Defense Purposes

Five regional committees were created within the petroleum industry this week as another step in the voluntary organization for defense purposes. Three members were added to the national committee, increasing the number serving on that body to 13, including D. V. Stroop, secretary.

Appointments were made by William R. Boyd, Jr., executive vice president of the American Petroleum Institute, who a week ago named the national committee at the request of the Advisory Commission of the Council of National Defense. W. S. Farish, New York, president, Standard Oil Co. (New Jersey), is chairman of the national committee.

The three men added to the national committee are Frank Buttram of Oklahoma City, Okla., president of the Independent Petroleum Association of America; C. L. Henderson, Wichita, Kans., president of Western Petroleum Refiners Association, and C. L. Suhr, Oil City, executive vice president of National Petroleum Association.

The regional committees appointed this week are listed below with the first member designated chairman and the second vice chairman and secretary:

Northeastern: E. H. Barlow, Standard Oil Development Co., and R. W. Black, Standard Oil Co. of New Jersey, Elizabeth, N. J.

Southeastern: Wiley L. Moore, Wofford Oil Co., and H. A. Grumann, Sinclair Refining Co., Atlanta, Ga.

Great Lakes: L. W. Westcoat, Pure Oil Co., and P. L. Krauel, Standard Oil Co. of Indiana, Chicago.

Central: J. C. Hunter of Abilene, Tex., president, Mid-Continent Oil and Gas Association, and R. C. Powell, Texas Co., Fort Worth, Tex.

Western: R. A. Sperry and B. A. Moeller, General Petroleum Corp. of California, Los Angeles.

Michigan's Deepest Test Finds Gas in New Deep Pay

SAGINAW, Mich., Nov. 26.—Gulf Refining Co. reported today that its 1 Bateson, S½ SE SE 2-14n-4e. Bay County, Michigan, had struck a gas flow estimated at 12,000,000 cu. ft. in the Salina at a depth of 7,452 ft. This well is the deepest ever drilled in Michigan, the former record holder being Newaygo Oil & Gas 1 Bates, 12-13n-13w. The latter well stopped in the Trenton at 6,674 ft.

The Gulf test, which is a short distance west of the town of Kawkawlin, topped the Salina formation at 5,840 ft., and reported a show of gas which was cutting the mud and trying to blow out at 7,368 ft. The gas was found in a dolomitic streak. The show was not tested as the company's plans were to carry the test to between 9,000 and 10,000 ft. in an attempt to explore the whole of the possible pay section.

The strong flow of gas found 84 ft. below the showing marks the first commercial production from the Salina, as well as the deepest production found in Michigan. The Salina is not, however, the lowest pay stratigraphically as production is found in the Trenton limestone of Ordovician age in Monroe County in the southeastern part of the state. At this location, the Trenton may be expected at about 1,500 ft. below the Upper Silurian Salina formation.

Michigan Association Expands Board to 28 Members

Directors of the Oil and Gas Association of Michigan recently met and voted to increase the directorate from 24 to 28 members, beginning the first of the year. The four new directors will be elected at the annual meeting and elections, December 9 at the court house in Mount Pleasant, Mich., along with 12 other directors to fill terms which will expire then.

The report of the special lease committee was accepted, recommending that the state leases be written in the future to have expiration based on the starting of a well within the 5-year period rather than on the completion within 5 years.

Oil Tank Ships and Barges Now Number 2,056

WASHINGTON, D. C., Nov. 26.—The petroleum industry's fleet of tank ships and barges totals 2,056 vessels registered under the United States flag. The combined fleet has a capacity of 40,961,340 bbl., according to the latest check here of Maritime Commission information.

Steam tank ships have a capacity of approximately 28,358,500 bbl. and motor tank ships are capable of carrying 4,729,700 bbl.

The industry's fleet of tank barges for ocean, coastwise, Great Lakes and inland waters totals 1,400 vessels with cargo capacity of 7,875,000 bbl.

East Texas Fields Recovering From Flood Damage

LONGVIEW, Tex., Nov. 26.—Rains which swelled East and South Texas streams to the flood stage terminated at midweek and permitted the oil industry in those key producing sections to take stock of the damage incurred.

Preliminary surveys indicated that damage was slight and that flood waters will cause only a temporary delay in normal field operations. In East Texas, particularly, producers have guarded against the frequent escape of creek and river waters. Experience of similar floods in the past has been that only routine field work is delayed and that little actual property loss results.

Interruption of communications in the Panhandle district hampered pipe-line dispatching, drilling and routine producing operations for the period that highways were impassable. There too the storm damage was of a temporary nature so far as oil operations were concerned.

The section of the East Texas field between Longview and Kilgore suffered most severely from the flood waters in this section of the state. Leases and pump houses were flooded throughout the section with water bursting banks of Rabbitt Creek.

Complete Paleontological Map Of Upper Texas Gulf Coast

HOUSTON, Tex.—Completion of a paleontological map of the upper Texas Gulf Coast district has been announced by the Statewide Map & Drafting Co. of Houston. The map has a scale of ½ in. to the mile and shows all surveys, fields and locations of wildcat tests with paleontological datum and depths of the latter. This company also recently issued two similar maps covering Southwest Texas, and within the next week will complete one covering the Louisiana Gulf Coast. The company recently moved to new offices at 803 Lamar Street, Houston, Tex.

Labor Disputes Bring Proposals For Regulatory Legislation

By HENRY D. RALPH

WASHINGTON, D. C., Nov. 25.—Strikes and labor troubles slowing production in plants vital to national defense are bringing suggestions for legislation to impose some sort of regulation on unions, but any such move will be stoutly resisted by the administration.

Before the election President Roosevelt announced that the defense program would not be permitted to interfere with the progress of social gains of his administration, of which the labor policy is the most important part, and events since the election indicate that he is even more of this opinion. The president is known to believe that his reelection is due in very large measure to the almost solid support of the labor vote, that is, the rank and file as distinguished from the political positions of various union leaders. Therefore, the administration will not modify its labor policy, which, essentially, calls for a strong union movement and giving labor a larger share in the national income.

The administration will not, of course, permit its defense program to be crippled by a series of strikes and unjustifiable wage demands, but it has plans for preventing this through administrative action so that demands for restrictive legislation will not become overwhelming. The labor policy of the defense program is being handled by Sidney Hillman, C.I.O. leader and a member of the National Defense Advisory Commission. The commission and the Army and Navy have been committed to the policy that defense contractors must comply with all labor laws, and while they have not yet bowed to the demands of C.I.O. extremists that contracts be denied firms found by the N.L.R.B. to have violated the Wagner Act, Commissioner Hillman hopes that outstanding disputes will be settled in the near future so that this phase of the policy can be applied fully.

Even though strikes in defense industries should become much more common the administration will not consent to any legislation outlawing strikes. The strike is considered the fundamental right and the ultimate weapon of labor, and any outlawing of the strike would inevitably be accompanied by government regulation of labor policies of employers. Some time in the future, if there is union support for it, there may be legislation for all industry similar to that now in effect with respect to railway labor under which there is permanent mediation machinery and a compulsory waiting period before a strike notice becomes effective. For the present, however, the only curb on strikes will be the persuasion of government officials acting through the U. S. Conciliation Service and through 25 regional offices being set up by Commissioner Hillman to deal with labor disputes in defense industries. A considerable number of local disputes already have been settled quickly in this manner, and in several cases the national officers of unions have put pressure on locals to call off unauthorized strikes.

Apply Double Pressure

The policy toward disputes in defense industries is to put pressure on both employers and unions to avoid work stoppages, to induce both sides to negotiate, and to discourage sudden and exorbitant demands by labor. But in the process, employers will be pressed to yield to the demands of labor for increased wages, particularly in the lower brackets. Pressure for general wage increases will become widespread as industrial activity improves and particularly if the cost of living rises and industrial profits increase. The administration's policy is to help workers to get a larger share of business profits and of the national income in general, so encouragement will be given to the pressure for higher wages provided the increases are not so great as to upset our internal economy. If wage demands would throw some groups of workers or some localities out of balance with others, the administration's pressure will be against them. Also, the administration's policy is to keep the general level of wages in line with commodity prices and the cost of living. This is a subject which is giving real concern to the defense planners, since an inflationary spiral of wages and prices would vastly increase the cost of the defense program and would throw all industry out of gear. Therefore there will be official resistance to wage demands which are out of line with living costs or which in turn might cause an increase in commodity prices, but if prices do go up the administration will insist that wages rise proportionately.

No Important Changes

The wage and hour law is considered a basic part of the administration's labor policy and of our economic structure, and there is almost no possibility that it will be amended in any important respect. The requirement that overtime rates be paid for all work beyond 40 hours per week may increase costs in defense industries where shortages of skilled labor are beginning to develop, but the administration feels that this problem can be solved by apprentice-training programs, reclassification of workers, and other means. Neither is there much chance of amendments to the Wagner Labor Relations Act. The appointment of Dr. Harry A. Millis to the N.L.R.B., replacing Chairman Madden, was accompanied by the resignation of three key N.L.R.B. officials with left-wing leanings, and as a result it is expected that the board will revise its policies and personnel and take a more judicial and middle-of-the-road attitude toward labor disputes. This should remove many of the criticisms that the board has been biased and crusading, but at the same time will protect labor's right to collective bargaining, so pressure for congressional action to amend the law will decrease.

The fight between the C.I.O. and the A. F. of L. types of unions apparently is to continue for some time to come, in spite of President Roosevelt's appeal for resumption of peace negotiations. The administration is very anxious to end this feud for many reasons. Petty political bickerings between the two groups make it difficult for the administration to make any appointments or for Congress to enact any legislation in the labor field if there is any difference of opinion between the two union organizations, while membership fights between rival unions have caused many unnecessary strikes and disturbances and have brought the labor movement into disrepute. If the two groups could unite on a workable program the membership of both probably would increase, and some of the New Dealers foresee a total union membership of 10 or 12 million by 1944, which would mean at least twice that many votes or enough to insure the election of an administration pledged to continue the New Deal labor and social policies. However, there is little prospect of an early labor peace because so many paid union officials would lose their incomes and their prestige through the consolidation of rival unions. As a result, the administration probably will remain cool toward the more extreme leaders of both the C.I.O. and A. F. of L. and will make appointments without much regard for either group.

•

Low-Gravity Residuum Gets Higher Rail Rates

WASHINGTON, D. C.—Higher rail freight rates on low-gravity petroleum-oil residuum throughout the Southwest have been permitted by the Interstate Commerce Commission to become effective with the exception of the rate between Mount Pleasant, Tex., and New Orleans, La.

The increase was accomplished by a change in the tariff description of residuum proposed by practically all the railroads in southwestern territory and approved by the Pan American Petroleum Corp., Standard Oil Co. of Louisiana, Shell Oil Co., Inc., and Texas Co. The change restricts the residuum rate to refinery cracking stock having A.P.I. gravity not less than 15°. In the past this rate has applied to all residuum with a gravity of not more than 38°. In the future residuum with gravity of less than 15° must move on asphalt rates which in some cases are much higher.

The only protests were from the Talco Asphalt Refining Co., Mount Pleasant, and the Flintkote Co., manufacturer of prepared roofing in New Orleans. They showed that the change in description would increase the rate on asphaltic residuum between these points from 15 cents per 100 lb. in tank-car lots to 28.5 cents, an increase of 90 per cent. The I.C.C. held that a mere difference in A.P.I. gravity does not justify a difference of 90 per cent in the rates, especially where the 90 per cent higher rate applies on the petroleum-oil residuum having the lower value. It therefore refused to permit the new description to apply to shipments between these points but because there were no protests regarding other movements the commission permitted the new description to become effective elsewhere.

During the hearings the railroads testified that petroleum-oil residuum left from the cracking process is usually below 15° gravity, and while this could be cracked it is not ordinarily considered refinery cracking stock nor shipped between refineries. They asserted that the residuum rate was intended to apply to movements between refineries and was not intended to move asphalt.

Coming Months Critical Period For Interstate Oil Compact

(Continued from Page 25)

that seems to get the greater circulation.

The Interstate Oil Compact Commission has presently no power to make rules which would be binding upon the several states. There has been considerable discussion as to what, if any, additional power is needed or should be granted to the Interstate Oil Compact Commission and such discussions have involved the question as to how such power if deemed desirable could legally be granted the commission. Within the limited time that the committee of 29 of the I.P.A.A. studied this matter it was impossible to reach definite conclusions on the legal questions involved so no suggestion concerning increase in present authority was made. What the committee did find and what the membership did approve was the recommendation of greater activity under the present provisions of the compact.

The Compact Commission can plan and recommend to the states improvement of the existing statutes and the enactment of new statutes in states now lacking oil and gas conservation measures. Its recommendations would, I feel certain, be received with respect if it established fully that it was a body of men expert in oil and gas conservation practices. In the present personnel of the Compact Commission are men who have made close study of the laws and administrative methods of their own states. Their knowledge should be put into a common fund for the benefit of all the states. At the command of the Compact Commission is the vast reservoir of operating knowledge, gained through the years by the oil industry in field and laboratory. Such knowledge can be brought together best by delegating the task to a director who knows what to look for and where to look.

Can Gain Public Prestige

All planning and recommendations concerning conservation and all that the term implies—operating practices, equitable and orderly withdrawals from the reservoirs, balance of current supply with consumer demand, economic spacing of wells and the many other factors of true conservation—should be made intelligible to the public. The Compact Commission can attain a weight and a dignity nationally not possible of realization by a single state. One trouble in the past is that the Compact Commission is heard of once each 3 months. It cannot establish itself publicly or even with the oil industry as the authoritative national voice of conservation when it is heard from but four times a year.

Only six states now belong to the compact. There should be four times that many, counting in the states which hope and believe that they will become producing states. The best way to enlist new supporters in any cause is by proving its worthiness. The presence of observers from nonmember states at meetings of the Compact Commission may be taken as evidence of real interest and a desire on the part of such states to become members, once they are convinced that a useful purpose will be served.

The Independent Petroleum Association of America wants the compact to succeed. All criticism the I.P.A.A. has made has been for the purpose of increasing the value of the compact to the states, the public and the oil industry. The members of the I.P.A.A. realize that some regulation is both necessary and inevitable, but they wish to see that regulation effective and equitable and kept on the plane of practicality. The more it is planned by those who live in the atmosphere of oil production the greater is the possibility that the oil producer will be enabled to go ahead with his work of finding and developing the needed new fields.

There is no time to waste. The authority given by Congress for states to enter the compact, granted first in 1935 and twice renewed for 2-year periods, has a present terminal date of September 1941. The necessary renewal by the state legislatures for continued membership must be obtained in the sessions of 1941.

The continuance of the compact requires a vigorous exercise of the policy-making and advisory authority now possessed by the Compact Commission—a more vigorous exercise of such power than has heretofore been displayed.

●

Refined Products Exports Continue Decline in September

Exportation of refined petroleum products continued their steep decline in September with only a slight recovery in offshore movements of crude.

At the end of 9 months, petroleum exports from this country totaled 102,435,000 bbl., a decline of 42 per cent compared with shipments of 145,878,000 bbl. for the same period in 1939.

Crude-oil exports totaled 4,260,000 bbl. in September, an increase of 90,000 bbl. over August, but 38.4 per cent less than in the same month last year when shipments totaled 6,925,000 bbl.

Through the first 9 months this year the United States crude exports totaled 40,452,000 bbl. a decline of 26.6 per cent compared to 55,147,000 bbl. for the same months last year.

Offshore movement of refined products in September aggregated 5,288,000 bbl., compared to 6,760,000 bbl. in August and with 10,797,000 bbl. for the same month last year. The decline of 37 per cent in September exports of refined products is higher than the year's average so far, which is 31.6 per cent, indicating that the slump is continuing at an accelerated rate.

DEATHS

PAUL R. MATTOCKS, 66, president of the B. H. & M. Oil Co., died at his home in El Dorado, Ark., recently. A native of North Carolina, he entered the oil business in Oklahoma in 1908 and was active in the drilling of the first well in Arkansas. He is survived by the widow.

JOHN A. FERRY, 74, Shippenville, Pa., oil-well driller and contractor for many years, died at his home November 23. During the early oil excitement at Edenburg, Turkey City, Fern and Clarion County, Pennsylvania, fields, he was widely known as an expert driller. His widow, a daughter and two sons survive.

CARL JOHN MOYER, 65, for more than 50 years a resident of Oil City, Pa., died November 24 following a lingering illness. For the past 35 years he has been employed as lease foreman for the William H. Corse Oil Co.

R. W. SAGE, 51, independent oil operator of Augusta, Kans., was killed November 20 in an automobile accident west of Augusta. He had resided in Augusta since 1917, and maintained offices there and in Wichita, Kans. The widow, four daughters and a son survive.

JOHN CUMING NOURSE, 55, founder and president of the Nourse Oil Co., died Sunday morning, November 24, at his home in Kansas City, Mo. Mr. Nourse was born in Grand Rapids, Mich., and after graduating from the Howe Preparatory School of Howe, Ind., came to Kansas City to work for the Standard Oil Co. At the age of 19 he founded his own company. His initial venture was at Chanute, Kans., but he returned to Kansas City where he opened offices. Mr. Nourse for many years was a member of the board of trustees of the Salvation Army in Kansas City, and actively engaged in supplying shutins and needy children with necessities. He and Mrs. Nourse celebrated their twenty-fifth wedding anniversary in September of this year. The widow and two sons, all of Kansas City, survive.

MATT BETHEL, 52, assistant superintendent of the Atlantic Pipe Line Co. at Longview, Tex., died in a Longview hospital from injuries received in an automobile accident near that city on Sunday afternoon, November 24. He is survived by the widow and a son, Jimmy, 3.

ANTHONY LALEY, 79, formerly identified with the oil-well supply business in Bradford, Pa., until forced to retire by ill health in 1921, died in Warren, Pa., on November 17. Born in Meadville, Pa., he became associated with David Phillips, maker of drilling tools, during early days of the oil industry. He later became superintendent of the shop and continued in that capacity when the shop was sold to Bradford Supply Co.

●

Oil Companies Object to Eastern Rail-Rate Cut

Vigorous opposition on the part of petroleum interests operating on the Atlantic seaboard has been offered to a proposal which is being considered by eastern railroad trunk lines for a sharp reduction in rates on crude oil and fuel oil from so-called St. Louis and Chicago group origins to eastern consuming areas. However, oil producers and shippers in the origin areas indicated, at a special meeting of the Central Freight Association and Trunk Line Association, that there would be no objection to the proposed rates if they were made subject to fourth-section relief at intermediate points. A committee of the two associations reported that it is inadvisable to go forward with the proposal to reduce rates because of the adverse effect such rates would have on the coal and oil industries.

An illustration of the drastic cut proposed is shown by the following figures: The current rate on fuel oil from St. Louis to New York is 48 cents, while the proposed rate is 28 cents; from Chicago to New York the rate is 43 cents, while the proposed rate is 25 cents; the current rate on crude oil from St. Louis to Philadelphia is 46 cents, while the proposed rate is 26 cents; from Chicago the rate is 42 cents, while the proposed rate is 24 cents.

THE MARKETS*

CRUDE OIL: Prices for crude oil are steady throughout the country. There has been no material change in conditions since the Pennsylvania Grade producers received their advance of 15 cents per barrel earlier this month, which has been made general by all purchasers. There are no particularly soft spots apparent in the market for crude although the South Texas situation seems a little less firm than other producing areas.

REFINERY: Kerosene and distillate-fuel-oil prices were advanced by most refinery suppliers in the Mid-Continent, Middle West and East Coast sections of the country. The advance ranged from ⅛ to ¼ cent per gallon. Higher quotations were reported paid without protest by buyers in the north whose stocks underwent substantial liquidation during the early November cold wave. Gasoline prices are steady.

TANK-WAGON AND POSTED DEALER: Prices for fuel oil followed the upward movement in the tank-car market in the Chicago and northeastern sections. There have been only scattered changes in motor-fuel prices. Revisions are mostly downward to meet local competitive conditions.

FINANCIAL: Fractional losses were suffered by oil securities which traded in a narrow range. Average of 30 representative stocks for the week ended November 23: High, 24.12; low, 23.03; close, 23.50. Week ended November 16: High, 24.40; low, 22.86; close, 23.75.

*Detailed information in Market Section.

International

War . .

Axis Forges Closer To Near Eastern Oil

GERMANY'S highly successful diplomatic invasion of the Balkans has brought the possibility of war a long step closer to the near-eastern oil fields which, many observers have repeatedly contended, are the ultimate goal of the Nazis' drive to the east. By consummating pacts with Hungary and Rumania, Hitler's envoys are trying to open a path for his armies to the very borders of Turkey, the only pro-British country between Germany and Iraq.

These diplomatic victories, however, have not yet brought those important fields within easy range of aerial attack. Mosul, nearest of the east Asian fields, is 800 miles from the southeast corner of Rumania, so that its bombardment would necessitate a flight of at least 1,600 miles. The fact that Turkey, excluding that small but important area of approximately 130 by 60 miles north of the Sea of Marmosa, the Dardanelles and the Bosphorus, cannot be invaded except by crossing water, may indicate that the latest German successes are still far short of their ultimate goal.

Turkey's promises of military action if western Thrace is invaded indicate that the Turks will not submit to Axis' demands without resistance. The attitude of Russia, in spite of the recent visit of her minister to Berlin, is also an important but unpredictable factor because of the mutual-assistance pact between the U.S.S.R. and Turkey. On the basis of these indications it appears that the fate of the vast oil properties of the Near East is not due for immediate decision.

Italy's Drive Resisted

Italy's role in the drive to the east has been thwarted at least temporarily by the surprising Greek resistance and, it is believed, to a large extent by Italy's desperate shortage of oil. This critical shortage has reportedly immobilized the Italian fleet and all but a small part of the air force. The damage reported done to the stationary Italian fleet at Taranto and the comparatively light use of planes in Greece despite the rout of the Italian forces is laid to a lack of fuel. Italy had been credited with having the world's second largest air fleet before the war but no more than a few hundred planes, according to reports, have been used at one time in Greece.

Evidence providing some support for this belief is given in statistics on the importation and consumption of oil by Italy which is almost wholly dependent on imports. According to a recent issue of Moniteur du Petrole Roumain, Italy consumed 26,233,000 bbl. of refined-oil products in 1939 when her imports, including 10,510,000 bbl. of crude oil, amounted to only 18,907,000 bbl. Assuming that a large part of the deficit was made up with products obtained in the hydrogenation of coal, it is apparent that even before the war began Italy had difficulty in meeting her requirements.

Italy's imports last year are reported to have consisted of 10,510,000 bbl. of crude oil, 841,000 bbl. of gasoline, 419,000 bbl. of kerosene, 6,647,000 bbl. of gas oil and fuel oil, 308,000 bbl. of lubricating oils and 182,000 bbl. of asphalt and other products. Countries of origin, according to this source, were:

Country—	Barrels
United States	6,977,000
Rumania	3,686,000
Netherlands West Indies	3,063,000
Iraq	1,683,000
Iran	1,002,000
Colombia	832,000
Albania	473,000
Netherlands East Indies	435,000
Mexico	113,000
Other countries	643,000
Total	18,907,000

Of the above countries only Rumania and Albania are now open and together they supplied but 22 per cent of the total. The United States was Italy's main source of supply last year but, according to Department of Foreign and Domestic Commerce reports, Italian imports of United States oil in the first 6 months of 1940 were well below the 1939 average. They included 1,400,000 bbl. of crude oil, an impressive total of 315,000 bbl. of lubricating oils and 585,000 bbl. of benzol but only 55,243 bbl. of gasoline. The crude-oil imports from the United States represent only 4 weeks supply for Italy's refining capacity of 51,400 bbl.

Rumania's Supply Inadequate

The possibility of Rumania making up the deficit is exceedingly remote. In normal times Rumania has an exportable surplus of about 15,000,000 bbl. annually but the bulk of her exports today are moving to Germany which is taking comparatively little of anything but gasoline. Bunker fuel for Italy's fleet must be transported by rail across Yugoslavia or Hungary for while it would be possible to transport it a large part of the way via the Danube, all Danubian oil barges are reported to have been commandeered by Germany. In addition Rumania's normal exportable surplus is expected to be much less this year due to the known substantial decline in drilling operations in the first part of the war.

The third of the major Axis partners, Japan, is reported to be still pursuing negotiations with the Netherlands East Indian Government for the purpose of increasing its imports of oil from the islands. The recent agreement between the two countries was a commercial deal involving the Mitsui firm of Japan and the British and American oil companies which operate in the East Indies.

In this deal, the Mitsui company contracted for the delivery of 1,800,000 tons of oil, adding 280,000 tons of crude oil and 446,000 tons of products, mostly gasoline, to Japan's quota of the islands' production. Of this, 500,000 tons are to be distributed by subsidiaries of the British and American companies and the remainder by the Mitsui company. Ichizo Kobayashi, head of the Japanese mission which has been negotiating with the Batavian Government, is said to be continuing these negotiations for the purpose of securing substantially larger supplies of East Indian oil for the direct use of the Japanese Government.

Venezuela . .

THE El Tigre district, in the east-central part of Anzoategui, eastern Venezuela, received new impetus as a producing area recently with completion of Mene Grande Oil Co. 1 La Leona, approximately 55 miles east of the Oficina field and 35 miles east of the company's camp at San Tome. The new producing well is credited with flowing 1,000 bbl. of 26° A.P.I. gravity oil in 24 hours from about 7,300 ft.

Egypt . .

Crude Production Continues Increase

THE increase in Egyptian crude-oil production which started in the middle of 1938 continued through last June with only minor interruptions. The daily average production from Egypt was reported at 18,850 bbl. in May and 18,365 bbl. in June by the United States commercial attache at Cairo. Since the European War started production statistics reaching this country have been interrupted and no data are available for February, March, and April.

However, the production of 587,445 bbl. in May and 550,900 bbl. in June compares with 438,370 bbl. in January and with 375,865 bbl. and 434,220 bbl., respectively, for May and June 1939. In addition to its crude-oil production which is derived from two fields, Hurghada and Ras Gharib, Egypt produces about 1,200 to 1,500 bbl. of natural gasoline each month.

Petroleum products have increased in cost at Cairo and Alexandria about 10 per cent.

Argentina . .

Y.P.F. Increases Offset Private Company Losses

CRUDE-OIL production in Argentina averaged approximately 57,220 bbl. daily in August, the same as recovered in July.

There is a continuing decline in the production by private companies in Argentina, which is being almost exactly offset by increases in the yield from properties operated by Yacimientos Petroliferos Fiscales, the national operating unit.

There is no detailed breakdown of production by pools within the country but the Tupungato district in the State of Mendoza is contributing an increasingly important part of the total. The Tupungato section is entirely under the jurisdiction of Y.P.F.

A large bulk of Argentina production is derived from the Comodoro Rivadavia field on the eastern coast line of the country where most of the refining capacity also is centered.

Rumania . .

Quakes Revisit Oil Properties

ADDITIONAL damage was inflicted on Rumanian oil properties November 25 by new and heavy earthquake shocks which were particularly intense in the vicinity of Pierna and Caprie.

Indication that severe damage may have been done to the oil pools was seen in the creation of new geysers near the producing fields. After the Monday shocks hot water spouted from the newly opened cracks in the earth's surface at several points.

The probability that additional shocks would follow the first severe disturbance was pointed out in a review of earthquake conditions in Rumania published in The Oil and Gas Journal, November 21, Pages 10-11.

New Pools and Extensions Bring Revival to Okfuskee County

(Continued from Page 27)

Hunton 3,918 ft., total depth 3,978 ft., set 6⅝-in. casing at 3,973 ft., drilled plug, hole filled with water, to plug back.

7. Henry Oil Co. 1 Dudgion, NE SW SE 36-12-9. Spudded.

8. Vierson & Phillips 1 Leonard, SW SE NW 11-13-7. Oswego 2,597 ft., Prue 2,615 ft., Caney 3,588 ft., plugged back and shot with 60 qt. at 2,606-19 ft., flowed 7 bbl. of oil and some water through tubing in 24 hours, testing.

9. Portable Drilling Co. et al 1 Walker, SW NW SW 17-13-7. Prue 2,762 ft., 7-in. 2,753 ft., drilled plug, salt water rose 1,200 ft. in hole; Bartlesville 3,153 ft., slight showing of oil, total depth 3,188 ft., shut down.

10. Fain-Porter Drilling Co. 1 Castle, NE NW SE 36-13-8. Cellar and pits dug.

Activity in Leasing

More development in the county is indicated by recent purchase by Shell Oil Co., Inc. of two blocks of leases from George Oil Co. and Carl J. O'Hornett. The blocks center around 16, 17 and 20-13-8, and 13 and 24-13-8 and 18 and 19-13-9.

Phillips Petroleum Co. recently took a spread of leases from H. O. Pope in 2, 11, 12, 15 and 16-11-9, and S½ SW 36-12-9 and part of S½ 33-11-10.

The I. T. I. O. has a small block of leases, mostly short term, in 1, 2, 11 and 12-12-8.

George Oil Co. has a 400-acre block in 22 and 23-12-8.

Numerous other operators have blocks and leases throughout the county, much of the acreage being taken during the past year. Lease prices have been above the average for both wildcat and proven acreage and contractors have been getting good prices.

Drilling activity, which has been continuous for the past year, has been the result of seismograph work in the last 2 years, other geological exploration and the several discoveries.

Observers following the new development in the county predict that activity in proven and wildcat areas will increase in 1941.

This is the most extensive drilling campaign in Okfuskee County since the Olympic pool development of a few years ago; and while that activity was confined principally to the one area, this is scattered throughout the county. The Olympic pool, partly in Hughes County, was opened in December 1934, but principal development was in 1935-37. It has a proven area of 3,540 acres and has produced around 11,000,000 bbl. of oil. Principal pay zones are in Senora, Cromwell and Hunton formations. It is on a faulted uplift.

Okfuskee County is located in the east-central part of the state, with total area of approximately 617 square miles. It includes 16 entire townships and parts of three others in Townships 10 to 13n, Ranges 7 to 12e.

The topography is made up of sandstone-capped hills and gently sloping valleys. The hills and valleys lie in lines parallel to the strike of the outcropping formations. The hills are the topographical expression of the resistant sandstones and limestones; the valleys are the expression of the soft clays and shales. The average relief between hills and valleys is approximately 60 ft. The highest point above sea level in the county is in 25-12-9; the lowest point is where the North Fork of the Canadian River intersects the county line in 25-10-12.

The formations exposed in Okfuskee County, with the exception of the recent sediments along the river bottoms, belong to the Pennsylvanian system of rocks, ranging from the Thurman sandstone through the Buck Creek formation. The recent sediments consist of unconsolidated silts, gravels, clays and sands; the Pennsylvanian rocks are made up of loosely consolidated clays, shales, sandstones and dolomite. The shales predominate. The sandstones, second in occurrence, form flat-topped hills with east-facing escarpments. The direction of the regional dip of the surface formations is to the north and west at the rate of 50 to 70 ft. a mile. This dip has been disturbed in every township in the county by local faulting, folding and settling.

Oil or gas, or both, ranging from showings to production, have been found in the county in the Senora, Bartlesville-Glenn, Booch, Deaner, Kingwood, Wapanucka, Cromwell, Dutcher, Mississippi, Misener, Wilcox, Tyner, Burgen and Arbuckle formations.

Practically every type of surface structure is found in the county, including almost all the graduations of structures from an anticlinal dome to a very slight nose. These structures are, in many instances, oil or gas bearing. The predominant producing type varies from a slight plunging nose to a flat terraced nose, very often with one or two closures. Most production in the county is directly related to surface faulting or folding. Frequently the accumulation of oil on the structures is associated with faulting. Production sometimes occurs between two faults. Many of the faults grade into folds with depth. The effect of these faults upon oil accumulation is not the same as found in other districts, as their strike almost parallels the normal dip of the formations. In this county, the operator must usually look to the normal side for production.

The lenticular condition of the sands, due both to horizontal variation and thickening and thinning, is one of the more important factors controlling the accumulation of oil in the lower Pennsylvanian. Both the Dutcher and Deaner sands often change to limes and shales in a few feet, resulting in spotted producing areas over the structure. It is typical of the entire county that the high escarpments are mainly synclinal and that the structural highs lie mostly in the valleys.

●

Leasing Campaign in Dakotas Foreshadows Development

(Continued from Page 23)

and there are also lands donated by the federal Government to charitable and educational institutions.

The Rural Credit Department owns about 450,000 acres of land in the area which is attracting attention and all but about 75,000 acres of this has been leased by companies and individuals. Titles on this land are good. Counties hold school loan foreclosures on some land and the title to this land is also good while tax-deed lands held by the counties are not considered as carrying a very good title. Other large blocks of land are owned by nonresident owners. Some of the leases obtained from individual owners have included from 3,000 to 10,000 acres.

Prospecting Work

The area has been surveyed by seismograph, torsion balance, magnetometer, and gravity meter parties. All of the above instruments are reported to work very well in the area and one company reported that structures checked with the several instruments. Several surface detail parties have worked the state for different companies.

Carter Oil Co. and Phillips Petroleum Co. had their own crews doing the seismograph and geophysical work. Kerlyn had its own magnetometer crew in the state and hired an independent seismograph organization. Ohio Oil Co. used an independent seismograph. Other companies in the area have varied their exploration from time to time. The work is still going on with the area around Bismarck, N. D., and Potter, Dewey, Sully, Hughes, Stanley, and Haakon counties in South Dakota, receiving the attention.

Carter Oil Co. has already drilled two stratigraphic tests in the area and drilling a third. At the present time there is a core drill operating at about 3,500 ft. in Morton County. The data thus obtained will give better control for geophysical work. There have been several deep tests drilled in the area; in addition to the California well above, the two outstanding wells are the State Royalty 1 State, in 35-18n-1e, Harding County, South Dakota, which was carried to 7,908 ft., and the Gulf 1 Hunter, in 28-3n-13e, Pennington County, South Dakota, which reached 5,211 ft.

Prospective Producing Formations

Two recent articles by the state geologists of North Dakota and South Dakota (The Oil and Gas Journal, May 30, 1940, p. 18, and July 18, 1940, p. 14) pointed out that a complete section of sedimentary rocks from the Cambrian to the Upper Cretaceous are present over most of the area. The principal structural features were also discussed. Western South Dakota was the subject of the Well Logs and Field Data of Prospective Areas carried in the October 10, 1940, issue of The Oil and Gas Journal.

The fact that fresh water has been found at considerable depths at many spots in both North and South Dakota has been the most discouraging factor. However, neither state has been sufficiently prospected to condemn it and until a number of deep tests have been drilled, it will be difficult to evaluate the possibilities. Some very small quantities of oil have been produced and gas has been obtained from many artesian wells.

Depth to oldest sedimentary rocks ranges from 3,500 ft. in South Dakota near the Black Hills, to about 15,000 ft. and possibly as much as 20,000 ft. in North Dakota. The depth presents a very serious economic problem as oil would have to be found in fairly large quantities to justify drilling at the current price of crude. Thickness of the prospective producing formations is an encouraging factor for large-scale production in case other conditions are favorable.

Outlet for any oil which may be discovered in the area would be mostly local although increase in the Canadian demand for crude may have some influence on determining whether an active prospecting campaign gets under way in the near future. A small refinery was recently built at Pierre, S. D., and another refinery operator is watching the area closely and is prepared to build a plant in case oil is discovered. Fuel-oil price in the area is 9.2 cents per gallon and a daily market for about 600,000 gal. of gasoline exists in the area. The high freight rate would give any local supply a distinct advantage. Gas brings 75 cents per M.c.f. at the well near Pierre.

Business men, civic leaders, and state officials of both states are hopeful for the entry of the oil industry in the state although they are taking no active part in the leasing themselves. They have extended the representatives of the oil companies all possible cooperation in getting started in the states. Both states have practically no laws affecting the oil business, a fact which has hindered oil men only slightly so far but one which will become increasingly important as the play progresses.

Natural Gas Used in Making Magnesium and Antimony

By PAUL REED

NATURAL GAS is used for two unusual types of metallurgical operations carried on in Texas which are distinctly different. Both processes are concerned with the production of metals which are essential for the program of national defense. These are magnesium and antimony. The magnesium operations are at Freeport on the Gulf Coast and the antimony operations are at Laredo on the Mexican border. Because of its unique nature and the large scale on which it is conducted, the magnesium operations will be described first.

Magnesium

These are the operations of Dow Chemical Co., carried on at a plant which has been recently completed at Freeport, Tex., for the extraction of magnesium from sea water and subsurface brine. A few years ago Dow Chemical Co. and Ethyl Gasoline Corp. built a large plant at Wilmington, N. C., where 200,000 gal. of sea water can be treated per minute for the extraction of bromide which is a necessary ingredient for antiknock gasoline. Since 1915, Dow Chemical Co. has been engaged in the production of magnesium and has developed plant facilities at Midland, Mich., for producing 12,000,000 lb. per year. With the recent increased demand for magnesium, the company planned to double its output by building the Freeport plant so as to be able to raise its output to 25,000,000 lb. per year.

Alloys of magnesium are used in the manufacture of tools, and parts for aviation, bus, railroad, and other transportation facilities. It weighs only one-fourth as much as iron; this factor as well as its strength, ductility and malleability has led to its increasing use in portable tools, household and office furniture, fixtures, and other commodities.

When it became necessary to take care of increasing demand, plans were made to obtain additional supplies by exploiting the mineral resources of the sea. Each of the 320,000,000 cu. miles of sea water contains 175,000,000 tons of chemical combinations of such materials as gold, silver, copper, irons, magnesium, potassium, aluminum, calcium, radium, strontium, chlorine, bromine, iodine and sulfur. And each cubic mile of these materials has a potential value of some $5,000,000,000. Operating the Freeport plant at a daily capacity of 360,000,000 gal. of sea water daily, it would take more than 800 years to extract the amount of magnesium (5,700,000 tons) contained in 1 cu. mile of sea water.

The process by which the metal is extracted from sea water consists in treating the brine with lime (produced from oyster shells) to precipitate magnesium hydrate. The magnesium hydrate is chemically treated, filtered, dried, and carried through electrolytic cells to produce pure magnesium and sludge. The magnesium is cast in the form of billets for transportation to the company's mills where it is used in the making of alloys.

In locating the plant, it was found that Freeport could furnish facilities required, such as water and rail transportation, electric power, an abundance of natural gas, sulfur, salt, and oyster shells for making lime, and a harbor suitable for operations. The intake line for the sea water is placed in the mouth of the Brazos River, and on being discharged from the plant it enters the western diversion channel of the Brazos, which carries it to an outlet on the coast that is several miles below the intake point. A 9-mile pipe line brings brine to the plant from Bryan Mound salt dome. Plant facilities, offices, and laboratories represent an investment of $5,000,000.

Antimony

Antimony is one of the 10 mineral commodities classified as strategic by the Army and Navy Munitions Board, according to the United Gas Log. It is used in the manufacture of storage batteries, babbitt metals, bearings, chemicals, medicinal agents and munitions.

Before the establishment of an antimony smelter at Laredo, Tex., by Texas Mining & Smelter Co., the market had been dominated by supplies of antimony from China and other oriental sources where it could be produced at low costs and delivered at low freight rates.

The chief antimony ore is stibnite, from which the pure antimony is obtained by burning out the sulfur and reducing with carbon. It is then refined through the use of six specially designed reverberatory furnaces using natural gas exclusively as fuel. The two products of the Laredo smelter are antimony oxide and antimony metal.

Antimony is neither malleable or ductile and it is used only in alloys, especially with lead and tin. It gives a hard, smooth surface to soft metal alloys and alloys containing the metal expand on cooling, thus reproducing the fine details of the mold.

Antimony is very important at the present time due to its wartime use. When heated to redness in the air, it burns with a bluish-white light, and this quality is utilized in the manufacture of tracer bullets and flares. The compounds of antimony find many uses, such as the trisulfide of antimony which is used in the manufacture of safety matches and red rubber. Antimony sulfate is used in the manufacture of explosives.

For the manufacture of storage batteries, 92,000 tons of antimony lead were used in 1938, according to the American Bureau of Metal Statistics. The antimony content of this material ranges from 4 to 12 per cent, and while a large part of the total is supplied by battery scrap, a substantial quantity of new antimony is required annually to "sweeten" the alloy.

An extensive use of antimony is in the manufacture of babbitt metals employed in bearings. These are applied widely in automotive equipment, although cadmium-silver bearings have been used extensively in this field during the last few years. Still another important use for antimony is in type metals for linotype slugs.

In addition to the magnesium and antimony operations just described, another project of a metallurgical nature is being planned in Texas which is counting on using natural gas. This is the undertaking, now under consideration, for the reduction of iron ore in East Texas to be carried on entirely with natural gas.

The present uses of natural gas in connection with metallurgical operations as well as those considered for projects which are now being planned indicate that natural gas must be regarded as an important factor in the exploitation of mineral resources.

Wrapping machine on Dow Chemical Co.'s line

Construction of Pipe Line

HOUSTON, Tex.—Latex Construction Co. constructed 41 miles of 10 and 8-in. gas line from the Hamman (Bay City) field. Matagorda County, Texas, to Freeport, and 9 miles of brine line from Bryan Mound salt dome to Freeport, for Dow Chemical Co.'s plant.

Laying of the gas line was completed within 21½ days with approximately a fourth of the line being through timber land and the remainder across pasture and cultivated land. It involved two major river crossings, a multiple line being laid across the Brazos River at Freeport and a single line across the St. Bernard River.

Due to the crossing of the Brazos River being at Freeport, where the river is used by large ships, the two lines had to be laid 25 ft. below mean low tide, necessitating the dredging of a cut across the bottom of the river. The 10-in. section of the line was laid at the Freeport end with the 8-in. line being laid out of the field.

Laying of the line was facilitated by the unusually dry weather which has existed. Much of the right-of-way is through low, boggy country and if the usual wet weather had been encountered considerable difficulty might have been experienced. Coating and protection of the line was supervised by Starr Thayer, corrosion engineer.

Natural Gas News

Complete Use of Natural Gas in Washington Creates Controversy

WASHINGTON, D. C.—The District of Columbia Public Utilities Commission, after a 2-year investigation of the possibilities of introducing natural gas to this area, has precipitated a controversy by publication of a report by its consulting engineer. The report proposed the full use of natural gas by the Washington Gas Light Co. beginning next spring, and recommended a 40 per cent reduction in gas house-heating rates. The commission indicated that a public hearing would probably be held in January before action is taken on the proposal.

In a survey released simultaneously, gas company officials questioned the desirability of such a change, and advanced many reasons why the complete change-over from manufactured to natural gas would be economically unsound.

The commission's consulting engineer placed the cost of the change at $618,000, asked that steps be taken by the commission for negotiation of a reduced wholesale rate to Washington from the natural-gas producers, and called for the retention of the gas-manufacturing plants as emergency standby equipment. He advised the commission that the 40 per cent reduction would mean a saving to consumers of $745,000 for the first year, and $1,530,000 a year by 1950.

The gas-company survey said reductions were based on the expectation that natural gas could be bought at a 30-cent rate, whereas 38 cents was the lowest that has been paid so far. A change to natural gas, the company stated, would cost over $2,000,000, and not the projected $618,000. Company officials questioned whether it would be safe to depend on natural gas from fields in West Virginia and Kentucky, but the commission report held that these fields could be depended upon for at least 10 years, and added that pipe-line connections were available to permit tapping of fields in the Texas Panhandle if necessary.

If the commission plan is adopted, natural gas would displace the mixed product, which now contains between 30 and 35 per cent natural gas by volume. Only consumers using gas for house heating would receive the 40 per cent reduction. The plan would necessitate adjustments to almost all gas appliances in homes of the company's 200,000 customers, as well as to its plants and supply lines.

Montana-Dakota Notes Are Approved

WASHINGTON, D. C.—The Federal Power Commission announced it has authorized the Montana-Dakota Utilities Co. to issue $3,900,000 of unsecured serial notes, repayable at the rate of $390,000 a year through 1950 and bearing interest at 1⅛ to 3½ per cent according to maturity.

The company advised the commission it would sell the issue at 100 plus accrued interest to the National City Bank of New York for its own account, $1,000,000; for the account of the Northwestern National Bank & Trust Co. of Minneapolis, $750,000; for the account of Marshal & Isley Bank of Milwaukee, $200,000; the Equitable Life Insurance Society of the United States, $1,500,000, and the Northwestern Mutual Life Insurance Co., Milwaukee, $450,000.

Net proceeds, estimated at $3,866,100 exclusive of accrued interest will be used to redeem $2,100,000 of 4½ per cent and $1,812,000 of 10-year 4½ per cent convertible debentures due in 1946.

Montana-Dakota Utilities operates 1,085 miles of pipe in sizes from 2-in. to 12-in. for the transmission of natural gas.

Probe of South Penn Natural Gas Ownership Asked by Cleveland

WASHINGTON, D. C.—The city of Cleveland has filed an amendment to its complaint against the rates charged by the South Penn Natural Gas Co. for the sale of natural gas to Hope Natural Gas Co., alleging that their sales agreement was not an arm's-length contract, and requesting the Federal Power Commission to obtain the names of all stockholders in the Standard Oil Co. (N. J.), owner of the Hope and East Ohio companies, and of the South Penn Oil Co., which owns the South Penn Natural Gas Co. The commission was also asked to issue an order requiring the South Penn Natural Gas Co. to furnish an inventory of its property devoted to supplying gas to the Hope company, its original cost, operating expenses of such service, quantities of gas delivered and a map showing facilities and points of delivery.

The city urged the "early substitution of a reasonable rate" to be charged by South Penn to the Hope company for natural gas for resale to East Ohio Gas Co. for consumption in Cleveland and elsewhere.

The city states in its petition that a substantial amount of the stock of the South Penn Oil Co., which owns 100 per cent of the stock of South Penn Natural Gas Co., is owned by large stockholders of the Standard Oil Co. (N. J.), which in turn owns 100 per cent of the stock of Hope Natural Gas Co. and East Ohio Gas Co. It is also stated that 32 of the 100 largest stockholders of Standard Oil Co. (N. J.) are also 32 of the 100 largest stockholders of South Penn Oil Co., and the city claims that such common ownership of a substantial amount, even though less than a majority, of stock in two contracting corporations engaged in the natural-gas business gives indication of unified control, particularly where the contract price is so exorbitant as to indicate that there was not arm's-length bargaining.

Gas Purification Plant For Canadian Field

CHATHAM, Ont.—Dominion Natural Gas Co. is building a small lime-process purification plant on Lot 139, Talbot Road, in the De Clute field, to handle production of its Pardo wells. The new plant will permit delivery of gas direct to the main transmission line through two short 4-in. lines instead of running it through a long line to the distant Glenwood plant.

Refinery News

Standard of New Jersey Adding New Furnaces

NEW YORK.—Building permits for the erection of two furnaces for crude-oil pipe stills at the Bayway refinery of the Standard Oil Co. of New Jersey have been issued by the city of Linden, N. J. Arthur G. McKee Co., of Cleveland, is the contractor. Permits were also granted for two switch houses for the crude pipe stills and for a control house for the stills.

British American Adding Unit To Produce Aviation Gasoline

CALGARY, Alta.—British American Oil Co. is installing equipment at its refinery here for production of aviation gasoline of 80 to 87-octane rating, for use in R.C.A.F. training operations in Alberta. Previously, aviation gasoline was supplied from the Imperial Oil refineries at Ioco, B. C., and Sarnia, Ont., but its production may be undertaken at the company's Calgary plant. Small quantities of aviation gasoline for use in the Northwest Territories are produced at the Imperial plant at Fort Norman.

Work on Falls City Plant To Be Started Soon

FALLS CITY, Neb.—Plans for a 2,000-bbl. refinery in the Falls City pool of Southeast Nebraska have been announced. Work on the plant will be started immediately by Curtis Flint and Lewis A. Foulger, both of Long Beach, Calif., and Robert C. Druesdon of Omaha. The plant, to be operated under the name of Falls City Oil & Refining Co., will specialize in the manufacture of tractor and diesel fuels, cleaning solvents and heavy heating oils, Mr. Flint said.

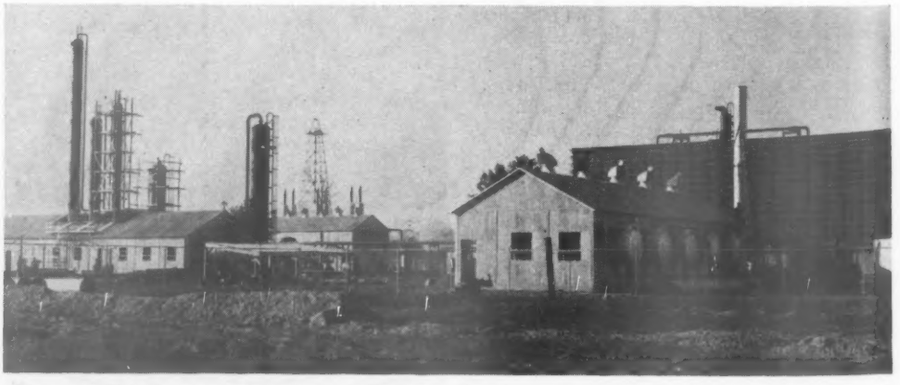
Natural Gasoline

Mockley to Move Texas Plant To Louisiana Field

BROWNWOOD, Tex.—Mockley Petroleum Corp.'s natural-gasoline plant at Fry, northwest Brown County, will suspend operations December 1 and part of the equipment will be moved to Eola, La., by Anchor Gasoline Corp., M. E. Mockley announced Saturday. Nearly 50 miles of the gas-gathering system in the Fry area will be taken up.

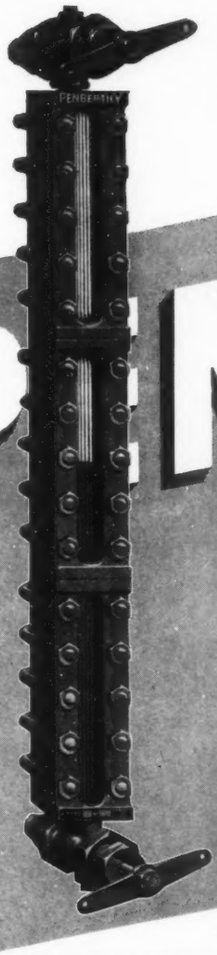
Mr. Mockley built the 20,000-gal. plant in 1928 for Amerada Petroleum Co. and took over its operation 4 years ago. He is a large stockholder in the Anchor firm.

WARREN PLANT IN SALEM POOL OF ILLINOIS COMPLETED



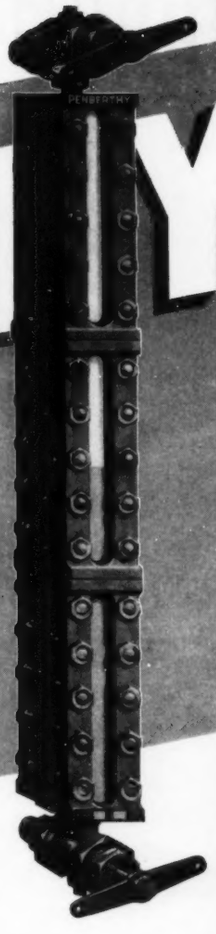
Warren Petroleum Corp., Tulsa, has completed its new natural-gasoline plant in the Salem field of Illinois, the completed plant now producing about 40,000 gal. of gasoline daily. Its production includes manufacture of propane and butanes. The plant is the third in the area, Texas Co. and Sunflower Gasoline Co. already having units. The above photograph, taken when the plant was nearing completion, shows stripping and fractionation facilities, the compressor plant, boiler house, and cooling tower.

PENBERTHY *Reflex*
DROP FORGED STEEL
LIQUID LEVEL GAGES



Liquid shows black—empty space shows white. Preferred wherever liquid level must be easily and positively visible . . . and when liquids are under high pressure or at high temperature.

PENBERTHY
DROP FORGED STEEL
Transparent
LIQUID LEVEL GAGES



Used to observe color and density of liquids under high pressures, and/or temperatures. Construction is exceptionally rugged . . . similar to Reflex types.

PENBERTHY LIQUID LEVEL GAGES

meet your requirements

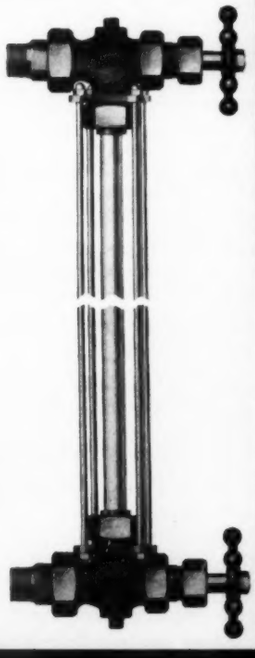
All Penberthy Gages conform with A. P. I.—A. S. M. E. requirements.

PENBERTHY *Reflex*
WATER GAGE SET

Water shows black—steam shows white. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler.

PENBERTHY
DROP FORGED STEEL
LIQUID LEVEL GAGES

Made of Chromium-molybdenum alloy temperature-resisting steel, extra heavy throughout. Stainless steel trimmed. Tubular glass type gages also available in various other metals suitable for practically all conditions.



PENBERTHY INJECTOR CO.

DETROIT, MICHIGAN • Canadian Plant; Windsor, Ontario

PENBERTHY PRODUCTS

PROGRAMS AND MEETINGS

Two New Speakers Secured for Tulsa Meeting Mid-Continent Association

A distinguished list of speakers is planned for the program of the annual joint meeting of the standing tax committees of the Mid-Continent Oil and Gas Association, which will be held at the Hotel Tulsa, in Tulsa on Thursday and Friday, December 5 and 6.

H. F. See, Atlantic Refining Co., Dallas, Tex., who is general vice chairman of the association's standing committee on federal income and excise taxation, has announced that Hon. Wesley E. Disney, member of Congress from the First Oklahoma District, will address the assembled petroleum-industry tax representatives on Thursday afternoon, December 5, at 2 p.m., and will discuss "federal-revenue problems."

Congressman Disney is one of the senior members of the very important House committee on ways and means in which committee all federal revenue measures are originated. Mr. See has been advised that the congressman will particularly deal with problems which are arising under the excess-profits tax provisions of the Second Revenue Act of 1940, as well as with probable future revenue problems.

Advance reservations for the association's annual tax meeting indicate that an unusual interest in revenue problems exists, and that the annual joint meeting will be the largest in the association's history.

Addition of two speakers to complete the program has been announced by John Hammermann, Jr., Gulf Oil Corp., Houston, Tex., who is general vice chairman of the association's standing committee on state and local taxation.

Hon. Gail S. Carter, director of the school-tax and compensating-tax divisions of the New Mexico State Bureau of Revenue, will address the assembled petroleum-industry tax representatives on Thursday afternoon, December 5, at 3 p.m. Mr. Carter is one of the outstanding tax authorities on sales and use taxation, and, in view of the fact that the various states levy a multiple number of sales and use taxes, Mr. Carter's discussion will be of wide interest.

The meeting will be opened at 10 a.m. with an address by Frank B. Long, vice president, Oklahoma Natural Gas Co., Tulsa, one of the association's leading officials and a widely known student of the oil and gas-industry tax problems.

W.P.R.A. to Meet at Hot Springs, Ark.

Directors of the Western Petroleum Refiners Association have reviewed the ballots of members regarding the place for the next annual meeting and find a majority favor Hot Springs, Ark., and the date of the meeting will be April 16, 17 and 18, 1941. The Arlington Hotel will serve as headquarters. This choice was made after reviewing the invitations of a large number of cities and the choice of the dates was made after considering the established dates of other meetings in which the members might be interested. The committee handling the ballot and making the decision included R. W. McDowell, H. W. Camp, C. L. Mayhall and O. L. Cordell.

Dr. J. C. Karcher to Speak at West Central Texas Banquet

ABILENE, Tex. — Dr. J. C. Karcher, Dallas, Tex., will be the feature speaker at the banquet program of the West Central Texas Oil and Gas Association at its annual meeting here December 2, it was announced by the association on Tuesday. His subject will be "The Oil Industry and Our National Defense." Over 700 persons are expected to attend the banquet, which will begin at 6:30 p.m. Dr. Karcher's address will be preceded by an entertainment program, which will be of unusual interest, according to J. C. Watson, secretary of the group.

In the afternoon open-forum session, D. Houston Bolin, Wichita Falls, Tex., president of the North Texas Oil and Gas Association, will speak on the subject "Why a New Oil and Gas Commission for Texas?" Several other independent oil operators of Texas will also discuss this subject. Clarel B. Mapes, Tulsa, secretary of the Mid-Continent Oil and Gas Association, will give a full explanation of the effect of the federal wage-and-hour law on the petroleum industry. Sam Russell, Stephenville, Tex., congressman-elect of the thirteenth Texas district, will also speak in the afternoon.

Call Meeting of I.P.A.A. for Eastern Oklahoma

R. Elmo Thompson, executive vice president, Sunray Oil Co., and vice president of the Independent Petroleum Association of America, for eastern Oklahoma, has called a district meeting of the association to be held in Tulsa at noon, December 4. Pres. Frank Buttram and Executive Vice Pres. Harold B. Fell will speak at the meeting, which will be held in the Roof room of the Tulsa Club. All independent operators are invited.

On Thursday, December 5, the committee on balance of supply with demand of the association will meet to consider the economic status of the oil industry.

●

Catalytic Development Co. Owns New Laboratory at Linwood, N. J.

Catalytic Development Co., subsidiary of the Houdry Process Corp., is the owner of the new catalytic research laboratory at Linwood, N. J., near Marcus Hook, Pa., which was described in The Oil and Gas Journal, November 21, Pages 12-13. The headline over the descriptive story inadvertently stated that the Linwood laboratory was owned by Sun Oil Co., which is not the case. The title should have read "Modernity and Safety Feature Houdry's New Laboratory."

CALENDAR OF EVENTS

December

WEST CENTRAL TEXAS OIL AND GAS ASSOCIATION, annual meeting, Abilene, Tex., December 2.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, New Orleans, La., December 2-6.

MID-CONTINENT OIL AND GAS ASSOCIATION, annual joint meeting of standing committee on state and local taxation, and standing committee on federal income and excise taxation, Hotel Tulsa, Tulsa, December 5-6.

INTERSTATE OIL COMPACT COMMISSION, quarterly meeting, Hotel Tulsa, Tulsa, December 6.

AMERICAN PETROLEUM INSTITUTE, Illinois Basin chapter, Southern Gardens, Salem, Ill., December 6.

SIGMA GAMMA EPSILON, national geological fraternity, symposium on Pennsylvanian of Texas, Oklahoma, and Kansas, Business Administration Building, University of Oklahoma, Norman, Okla., December 7.

NATIONAL ASPHALT CONFERENCE, Adolphus Hotel, Dallas, Tex., December 9.

NATIONAL CHEMICAL EXPOSITION, Stevens Hotel, Chicago, December 11-15.

PETROLEUM ELECTRIC POWER ASSOCIATION, Heidelberg Hotel, Baton Rouge, La., December 12-13.

MID-CONTINENT OIL AND GAS ASSOCIATION, annual meeting of general board of directors, Tulsa Club Roof, Tulsa, Okla., December 16.

1941

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book-Cadillac Hotel, Detroit, Mich., January 6-10.

LIQUEFIED PETROLEUM GAS ASSOCIATION, eastern section, regional meeting, New York, January 16-17.

COMPRESSED GAS MANUFACTURED GAS ASSOCIATION, INC., annual meeting, New Nork, January 20-21.

NORTHWEST PETROLEUM ASSOCIATION, Radisson Hotel, Minneapolis, Minn., January 23-24.

February

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 22.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., annual convention, Chicago, February 24-25.

AMERICAN PETROLEUM INSTITUTE, southwestern district regular spring meeting, Washington-Youree Hotel, Shreveport, La., February 27-28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, Hotel Mayflower, Washington, D. C., March 3-7.

AMERICAN PETROLEUM INSTITUTE, Pacific Coast District, Division of Production, regular spring meeting, Biltmore Hotel, Los Angeles, Calif., March 11.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-sixth annual meeting, Rice Hotel, Houston, Tex., April 2, 3, and 4.

AMERICAN CHEMICAL SOCIETY, St. Louis, Mo., April 7-11.

SOUTHWESTERN GAS MEASUREMENT SHORT COURSE, College of Engineering, Oklahoma University, Norman, Okla., April 15-17.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, regular spring meeting, William Penn Hotel, Pittsburgh, Pa., April 17-18.

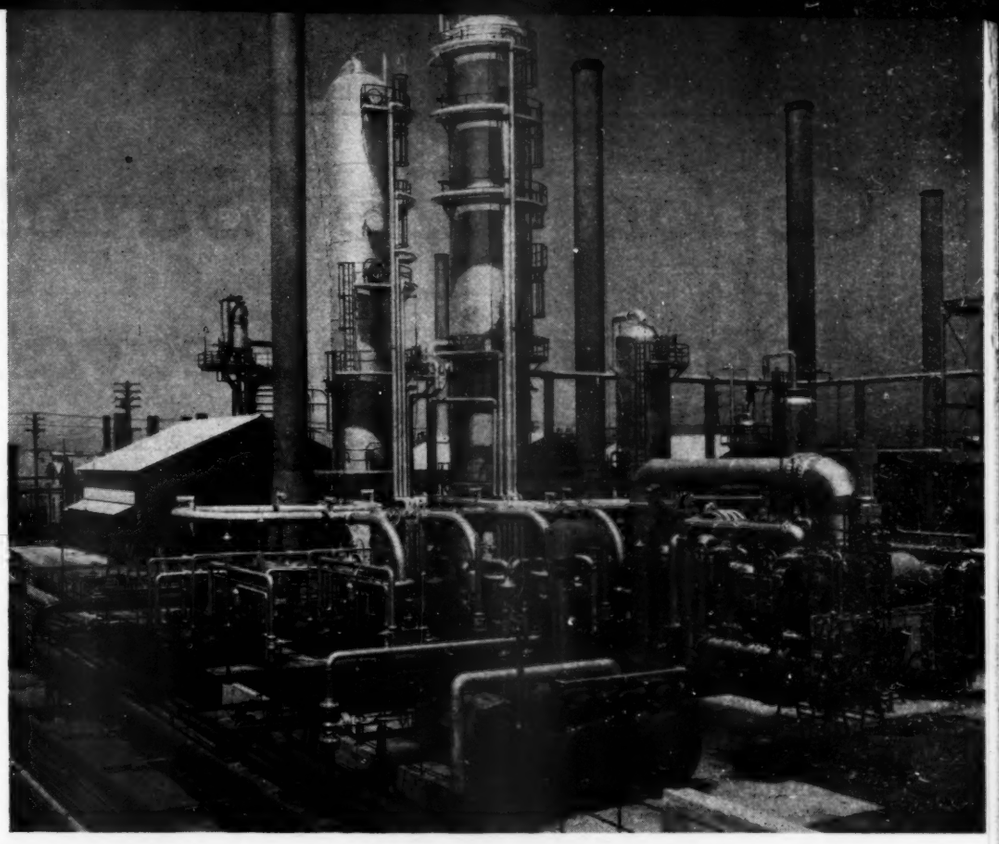
NATURAL GASOLINE ASSOCIATION OF AMERICA—Annual convention, Baker Hotel, Dallas, Tex., April 23-25.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Mayo Hotel, Tulsa, April 23-25.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

September

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, East Texas chapter, annual convention, Adolphus Hotel, Dallas, Tex., September 25-27.



The inability of California refiners to market economically their production of residuum is causing refinery expansion and modernization to continue at a high rate on the West Coast. At the Oleum refinery of Union Oil Co., on San Francisco Bay, the thermal-cracking unit shown here utilizes heavy fuel oil to produce high-grade gasoline

ENGINEERING & OPERATION

In This Section

NOVEMBER 28, 1940

COTTON VALLEY STRUCTURE WELL ADAPTABLE TO RECYCLING
By George Weber ..... Page 40

In the Cotton Valley field of North Louisiana work on the largest recycling project in the industry is progressing, the completely unitized program calling for construction of a 150,000,000-cu. ft. gas-recycling plant. With the project scheduled to get under way early in 1941, a study of the field, and of its adaptability to recycling operations, is of interest at this time.

HIGH ANTIKNOCK AVIATION FUELS FROM LIGHT HYDROCARBONS
By S. H. McAllister ..... Page 42

In the past 6 years there has been great progress in the manufacture of aviation fuels. A number of polymerization and hydrogenation processes, and more recently, alkylation processes, have been developed for synthesis of these fuels. Here proven practical processes are surveyed, their operating conditions described and general flow shown by simplified diagrams.

PREVENTING AIR POCKETS IN GATHERING LINES BY USE OF BLEEDERS
By Neil Williams ..... Page 51

To prevent air or gas pockets from forming at high places in field gathering lines, and thereby impede operations of pumps and engines by causing them to lock or knock, many types of traps, vents, and relief valves are used by producers. An air-relief valve and bleeder that has proven unusually effective for one company is described.

STUDY OF PLUMBITE SOLUTIONS USED IN PETROLEUM REFINING
By Alex Stewart and C. E. Corriss ..... Page 54

In the "doctor" method of sweetening gasolines it is desirable to produce sodium plumbite solutions with greatly increased lead contents at ordinary working temperatures. In an effort to increase the solubility of litharge in the preparation of these solutions, certain metallic oxides were investigated. These agents were found to stabilize supersaturated solutions of sodium plumbite.

OPERATING IDEAS ..... Page 53

PORTABLE SEPARATORS USED WHEN DRILLING-IN WELLS ..... Page 51

PROGRESS IN METALS—By W. L. Nelson ..... Page 64

Cotton Valley Structure Well Adaptable to Recycling

By GEORGE WEBER

CONSTRUCTION of the largest recycling project in the industry is progressing in the Cotton Valley field of North Louisiana. It represents one of the most advanced examples of applied conservation through cooperation among operators and other interested parties.

On June 29, 1940, the Cotton Valley Unitization and Pressure Maintenance Agreement* was signed by nearly 100 per cent of all operators and royalty owners in the field. The agreement provides for the pooling of all signatory operators' producing properties into a common operating unit. Field-wide pressure maintenance and condensate recovery will be carried out in a 150,000,000-cu. ft. gas-recycling plant, built and maintained by the Cotton Valley operators committee representing all operators in the agreement.

Initial operation of the plant is expected early in 1941. Compressors are now being installed in the plant and the contract for the field gathering and injection systems has been let. Estimated cost of the entire unit is $2,000,000.

The Cotton Valley project is of interest to the industry for several reasons. In addition to its importance in producing over 10,000 bbl. of condensate daily, it is of particular interest since it represents an advanced form of cooperative effort and points a trend toward greater conservation through that medium.

The pressure-maintenance plan has a signal advantage in that it incorporates an entire field into one system. The assignment of equitable participation of many interests and the inclusion of provisions for oil production from the field's flank, widen the scope of the project to cover most problems facing operators in other fields where recycling is under consideration. At this stage in its development, a study of the field itself and the application of the pressure-maintenance principle to it, is of considerable interest.

Cotton Valley Field

The field consists of an elongated anticlinal uplift extending in a northeast-southwest direction. The structure is regular, and the sand bodies concerned in the current project are generally uniform throughout its extent. The principal sand in the field is productive over an estimated 12,000 acres. Although faulting is pronounced in shallow formations it does not affect the regularity of the structure as deep as the Cotton Valley formation.

A number of horizons are productive of oil and gas in the field. Gas was first discovered in 1922 and subsequent development opened oil and gas production in several shallow sands. Deeper drilling resulted in discovery of oil and gas in the Hosston or Travis Peak formation, and the deeper Cotton Valley formation.

The Cotton Valley plan applies only to present and future production below the top of the Cotton Valley formation. At present several sands of that formation have shown indications of production, and three, the "D," Bodcaw and Pardee sands are now producing in the field. Two of the three sands, the "D" and the Bodcaw, extend over most of the developed acreage of the field, and have been included in the working provisions of the agreement at this time.

Both sands contain oil in a narrow rim on the flanks of the field. Throughout the greater part of their extent on structure, however, they are saturated with high-pressure gas. Pressure reduction at well heads results in the condensation of liquid hydrocarbons from the gas, in a yield of over 3 gal. per M.c.f. of gas. The richness of the gas gives Cotton Valley the greatest condensate yield of any large gas field developed up to now.

The gas from both the "D" and Bodcaw sands will be recycled upon completion of the plant. Each recycling system will be handled as though for separate fields, excepting that both will use common gathering systems and plant facilities. In addition to gas-condensate production from the two sands, casinghead gas from all oil wells in the field will be gathered, processed, compressed, and returned to the formation. Provisions allow extension of the recycling plan to include any other sands below the top of the Cotton Valley formation, whose development may indicate feasibility of the project.

Geologic Data†

A number of sands are present in the Cotton Valley formation of the field. They are generally continuous over the structure and are characterized by their hardness. In their descending stratigraphic order they are termed; the "A," "B," "C," "D," Bodcaw, Pardee, Davis, "F," "G," "H," and "I" sands. The series extends from within 100 ft. of the top of the formation to over 1,000 ft. within it. The Bodcaw sand is encountered on an average of 500 ft. from the top of the Cotton Valley.

Upper sands.

The "A," "B," and "C" sands are hard calcareous bodies showing little porosity or permeability. The "A" is a dark gray sandy lime which has shown gas saturation in some wells. The "B" is a similar body, ranging in thickness from 10 to 14

†Geologic data from a paper under preparation by E. Floyd Miller, geologist, Oliphant Oil Corp., Shreveport, La.

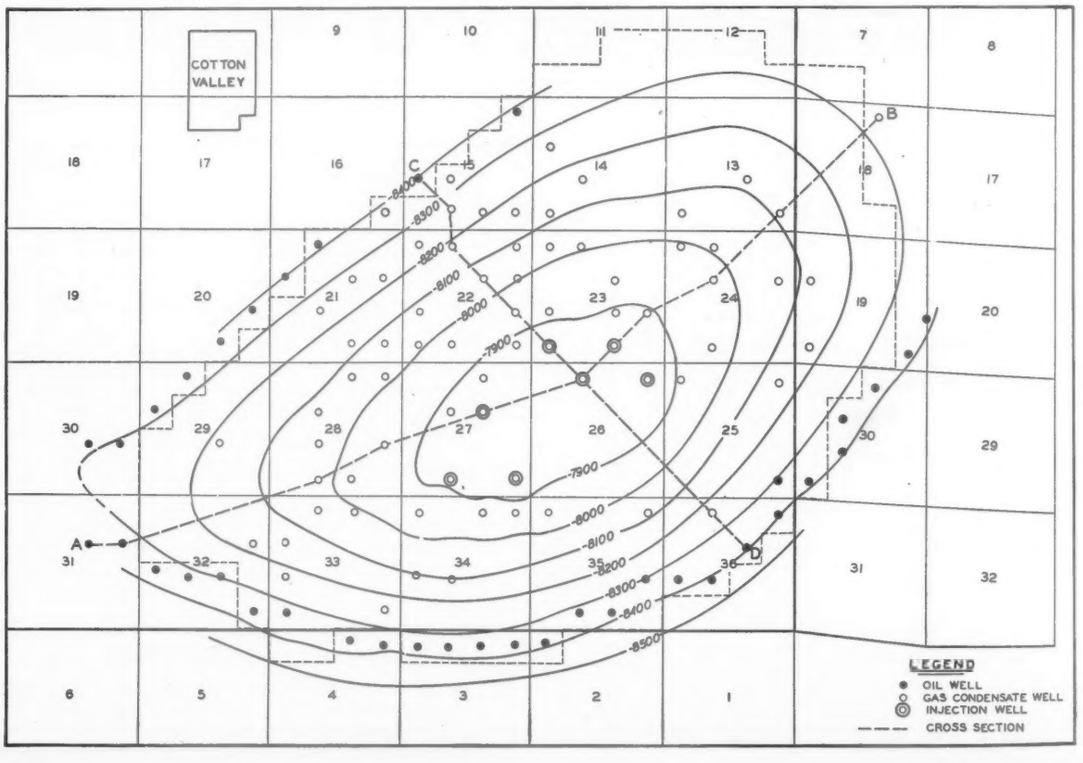


Fig. 1—The Cotton Valley field contoured on the top of the Bodcaw sand. The position of Bodcaw sand injection wells at the crest of the structure illustrates the recycling plan of returning gas to the top of the sand and producing from downstructure. The oil wells, rimming the field, are not included in their respective participating areas, but are produced by their original operators at the state allowable.

*For details of the Cotton Valley Agreement, see The Oil and Gas Journal, July 25, 1940, p. 168.

ft. and showing [illegible] or oil saturation. The "C" stringer consists of [illegible]ly or pure sand generally tight and unde[illegible]g a thin section of sandy shale. It has sho[illegible]fficient porosity in some wells to indicate [illegible]uction. The three upper sands, however, may [illegible]oe discounted as important productive horizons.

"D" sand.

The "D" sand is a salt-and-pepper colored sand with a greasy appearance even when saturated with gas. It has a calcareous bond and contains very hard streaks which comprise approximately one-third of its thickness. It is missing at some points on structure and ranges to a maximum overall thickness of 26 ft. Its average effective thickness is 10.3 ft. and its average porosity is 17 per cent.

The "D" sand is producing oil in 24 flank wells. The gas-oil contact in the sand is tentatively placed at —8,206 ft., and the oil-water contact at —8,294 ft. To October 1, the sand had produced 2,191,910 bbl. of oil and its current production averages 4,600 bbl. daily.

Bodcaw sand.

The Bodcaw is the principal producing sand in the field, where 8 wells produce oil and the remaining 78 wells are completed in the gas-condensate cap of the sand, extending over most of the structure. The Bodcaw is a hard clean sand with a silicious bond, ranging in overall thickness up to 55 ft. It is continuous over all of the structure thus far developed.

The sand's average effective thickness is 26 ft. Porosity averages 16.5 per cent and permeability varies laterally and vertically, running over 800 millidarcys in some wells. A characteristic of the Bodcaw, as seen in electrical logs of the sand, is the basal gradation into shaly, fine-grained sands with a very low permeability, but consistent porosity.

An estimated 50,000,000,000 cu. ft. of gas has been produced from the Bodcaw sand to date, yielding a total condensate production of 4,655,189 bbl. The sand had produced 662,740 bbl. of oil to October 1 and its current daily average production is 1,390 bbl.

Pardee sand.

The Pardee sand is a lenticular body existing on the southeast flank of the field. It produces oil in six wells and gas in one. The sand shows a very high permeability. The first oil in the Cotton Valley formation was discovered in the Pardee, which at that time was believed to consist of a lower section of the Bodcaw, separated by a lenticular shale break. Subsequent development showed the Pardee to be a separate sand. It had produced 889,600 bbl. of oil by October 1, and is now producing at the daily rate of 1,300 bbl.

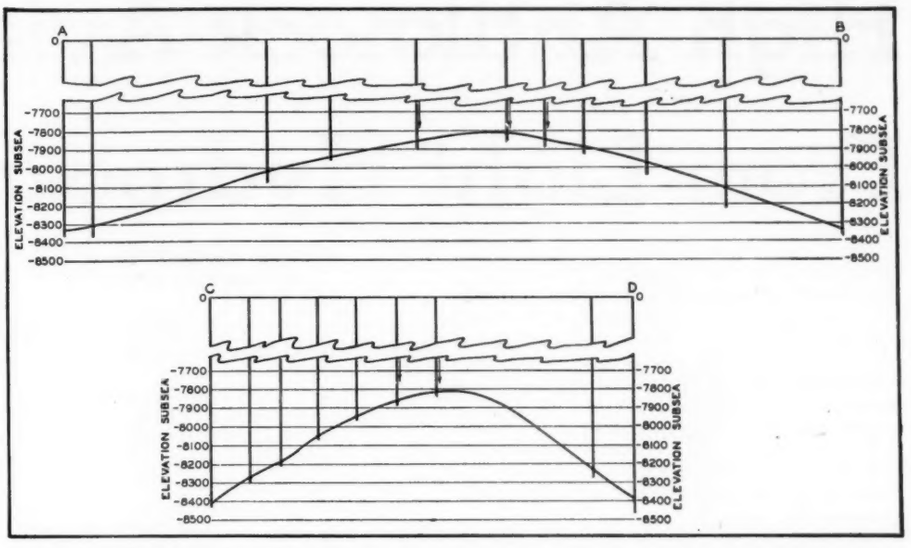


Fig. 2—The axial and perpendicular profile cross-sections of the field show the regularity of the anticlinal structure. Oil is produced in a thin rim on the flank of the field.

Lower sands.

The Davis is not producing oil or gas at this time, but its gas production is proven by a deep well completed in the sand, but later plugged and completed in the Bodcaw sand. The lower sand members are not widely explored but those penetrated and designated show characteristics similar to the three upper stringers.

Recycling Plans

From a study of the Cotton Valley structure a field-wide plan for recycling gas to the "D" and Bodcaw sands is being evolved. Fig 1 is a map of the field, contoured on the top of the Bodcaw sand. The dashed line outlining the structure indicates the limits of the Bodcaw sand participating area. It is the estimated limit of gas-condensate production in the Bodcaw sand, as accepted by the signatory operators to the agreement. All Bodcaw oil wells lie outside of this area.

Within the participating area the operators entering the agreement share expenses and returns in the proportion that their acreage bears to the total. Allowance is made to members for the cost of wells already drilled in the field, and the committee is vested with the powers of operator in drilling any additional wells. The field has been developed on an 80-acre spacing pattern, but much of the acreage, particularly on the northeast, is thinly developed. Substantial savings will be effected by precluding the necessity for 80-acre spacing in subsequent drilling. Future development will be determined by the necessity for obtaining efficient replacement of virgin gas with lean recycled gas.

Existing Bodcaw sand wells will be used as injection wells. The seven injection wells, indicated

(Continued on Page 104)

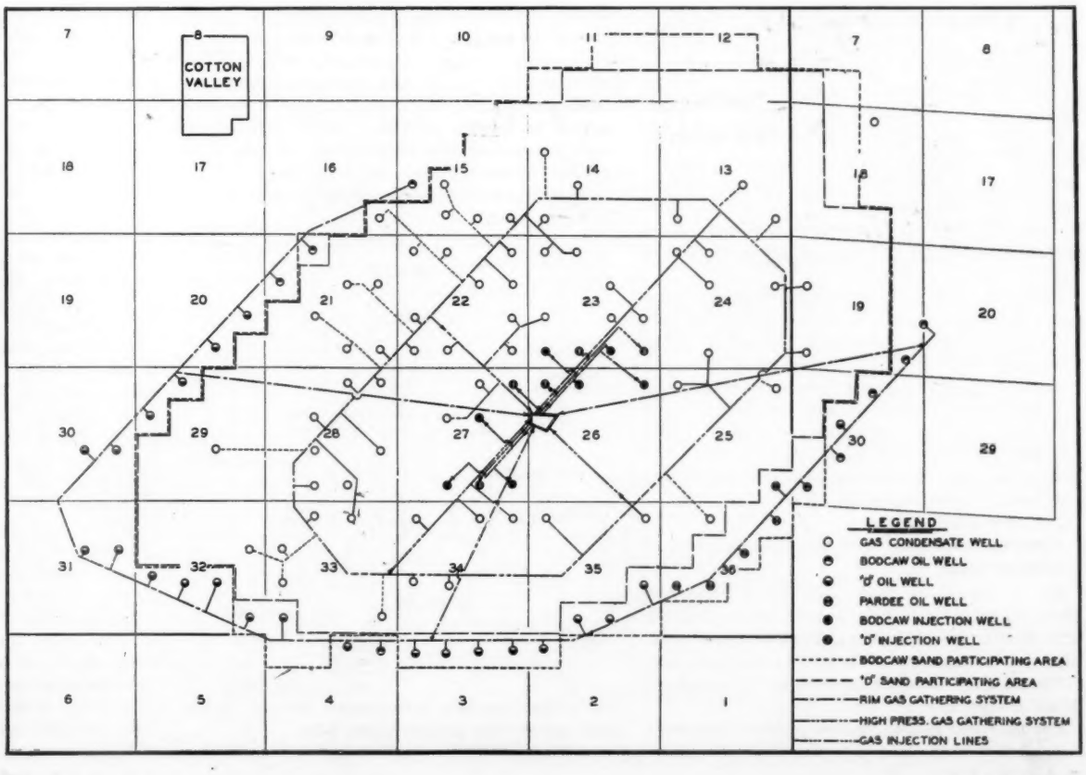


Fig. 3—Schematic operating plan for recycling gas to the Bodcaw and "D" sands in the Cotton Valley field. The participating areas and injection wells of the two systems are indicated, but the withdrawal wells from the two sands have not yet been selected. Engineers may choose from all gas-condensate wells enclosed in the participating areas for withdrawal wells.

High Antiknock Aviation Fuels From Light Hydrocarbons

By S. H. McALLISTER
Shell Development Co.

C. N. G. A.—An abridged summary delivered before the California Natural Gasoline Association meeting at Los Angeles, Calif., this month.

THE past 6 years have brought about many developments in the field of petroleum refining but in no phase of the industry has there been more progress than in the manufacture of aviation fuels. . . . There are a large number of hydrocarbons and oxygenated compounds which might be considered for aviation fuels in blends with or without the addition of lead . . . but the branched chain paraffins appear at present to be outstanding and it is with the commercial syntheses of these hydrocarbons that this paper is concerned.

In Table 1 are given typical specifications for aviation gasoline which will illustrate the boiling range and volatility requirements. High-octane number and B.t.u. content are particularly desired for military airplanes but it is only a matter of time until commercial air lines will have similar requirements. . . .

TABLE 1—SPECIFICATION OF AVIATION GASOLINES

Grade	*87	*90	*95	100
Octane No.	87	90	95	100
TEL, ml. per gal., max.	3	4	4	3
TEL, ml. per gal., min.			3.5	
Reid vapor pressure	7	7	7	7
Sulfur, max.	0.10	0.10	0.10	0.10
Freezing point, max., °F.	—76	—76	—76	—76
Water tolerance	±2	±2	±2	±2
Acid heat, °F.	15	15	15	15
Caloric value, B.t.u./lb.	19,000	19,000	19,000	19,000
Gum, mg.	6	6	6	6
Corrosion:				
Copper strip-copper dish	No gray or black discoloration			
Distillation, max., °F.:				
10 per cent	158			
50 per cent	212			
90 per cent	257			
Sum of 10 and 50 per cent, min., °F.	307			
Distillation recovery, min.	97			
Distillation residue	1.5			
Distillation loss	1.5			
Acidity of residue	Neutral			

*Data from A.P.I. paper of Heron and Beatty, New Orleans (May 18, 1939).

Until 1934 the only pure isoparaffinic materials available in quantity were isobutane and isopentane but they were far too volatile to be used alone. . . . Since 1934 a wide number of polymerization and hydrogenation processes have been developed and recently alkylation processes have entered this field. . . .

However, rather than attempt to survey the entire group, it appears desirable to confine this paper to the proven practical processes. These include:

1. The cold-acid polymerization process.
2. The hot-acid polymerization process.
3. The U.O.P. polymerization process.
4. The Polyco polymerization process.
5. Liquid-phase phosphoric acid polymerization.
6. Sulfuric acid alkylation.
7. Thermal alkylation.
8. Related processes such as hydrogenation and dehydrogenation.

All of these are now used to provide the branched-chain paraffins which when blended with selected straightrun gasolines of proper volatility provide the higher grades of airplane fuel.

The Houdry catalytic process is omitted as it is not comparable. . . .

The cold-acid polymerization process represents the pioneering effort in the field of producing 100-octane fuels. Plants were installed by Shell, Standard of New Jersey, Anglo-Iranian, and a number of other companies. While many of these were later modified to the hot-acid process or replaced by other units, a description of the process is given here as a basis for comparison. . . .

It includes absorption and polymerization. The feed consists of a refinery C_4 fraction from cracking operations which has been rendered substantially sulfur-free by repeated caustic washing. A typical feed from a California refinery has the following composition:

	Per cent
Isobutylene	18
α- and β-Butylenes	30
Isobutane	9-12
Butane	43-40
Sulfur, wt. less than	0.0005

The liquid hydrocarbon is contacted with 65 per cent sulfuric acid at 20°-35° C. countercurrently in two stages. Under these conditions over 90 per cent of the isobutylene is absorbed into the acid while the normal butylenes are relatively unaffected. . . .

The acid phase containing the absorbed butylenes is separated from the hydrocarbon layer and is passed to the polymerizers which consist of coils heated to 100° C. Polymerization is complete in about 1 minute and the product is then cooled and separated from the acid. The acid is returned to the absorption unit and the polymer is caustic washed and distilled to recover the diisobutylene. When 65 per cent acid is used, 75 per cent of the polymer is dimer and the rest trimer; the trimer is usually added to motor gasoline to improve its octane number.

The dimer fraction is hydrogenated to produce isooctane. When a C_4 feed containing less than 0.0005 per cent sulfur (turbidimetric) has been used, it is possible to hydrogenate with a very active type of catalyst prepared by the reduction of nickel nitrate on porcelain or other similar carrier. This is the practice (Fig. 1) used in the Shell group. . . .

The hydrogenation process operates at about 4 atmospheres pressure and 200° C. The hydrogen is derived from the pyrolysis of natural gas or the dissociation of ammonia. . . .

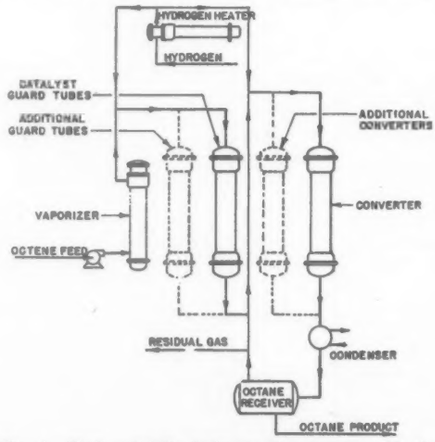


Fig. 1—Shell catalytic hydrogenation process. Single-stage system with catalyst guard tubes

As a means of prolonging the catalyst life it is customary to manifold the reactors in such a way that the fresh feed enters the converter which has the least active catalyst. While such catalyst may not be very active for hydrogenation, it is still capable of reacting with traces of sulfur and thus it acts as a guard tube for the more reactive catalyst. In this way it is perfectly possible to obtain more than 1,000 gal. of finished isooctane per pound of nickel in the catalyst chambers. The product obtained is fully saturated and by definition has a 100-octant number.

Hot-Acid Process

Hot-acid operation.—While the cold-acid process produces pure isooctane, the supply is limited by the isobutylene available and the cost of the pure isooctane necessarily remained high. Thus there was considerable incentive for further work. The hot-acid process[1] was the logical and direct outgrowth.

When the temperature of sulfuric acid absorption is raised, the absorbed isobutylene condenses to polymer and is reabsorbed in the hydrocarbon phase where the dimer is protected from rearrangement to trimers by the dilution effect of the butanes. At temperatures above 60° C. this reaction becomes very rapid and the isobutylene has only a transitory life in the acid; thus the acid phase acts as a catalyst and the isobutylene is completely polymerized. Moreover under these conditions an approximately equal quantity of *n*-butylenes react with the isobutylene to form interpolymer. The result is that the total yield of polymer is more than double that obtained with cold acid and less trimer is formed. . . .

A flow diagram of a commercial hot-acid plant is shown in Fig. 2. The reaction temperature is usually between 70 and 90° C. and acid of 70 per cent strength is used. The acid-to-hydrocarbon phase ratio is usually about 1/1 and the contact time expressed as volume of hydrocarbon throughput per volume of reaction space is 20-30 minutes. . . .

In this system the polymer is recovered from the hydrocarbon stream after caustic washing to remove entrained acid. In addition, it is necessary to remove any stable acid esters present by a high-temperature hydrolysis of the polymer. In this latter treatment the total sulfur is reduced from 0.2 to less than 0.03 per cent and the treated material is then stable to distillation. The sulfur content of the dimer cut is below 0.004 per cent and is suitable for hydrogenation

in the same type of unit as is used with the cold-acid dimer.

Operation of the hot-acid process is extremely simple and largely automatic. With proper supervision and control of reaction conditions, corrosion is not serious. The reactors in the Shell refineries are still in use after several years and no major replacements have been made. Plants have been constructed by Humble Oil Co., Standard of New Jersey, and one of somewhat different design by the Anglo-Iranian Oil Co.

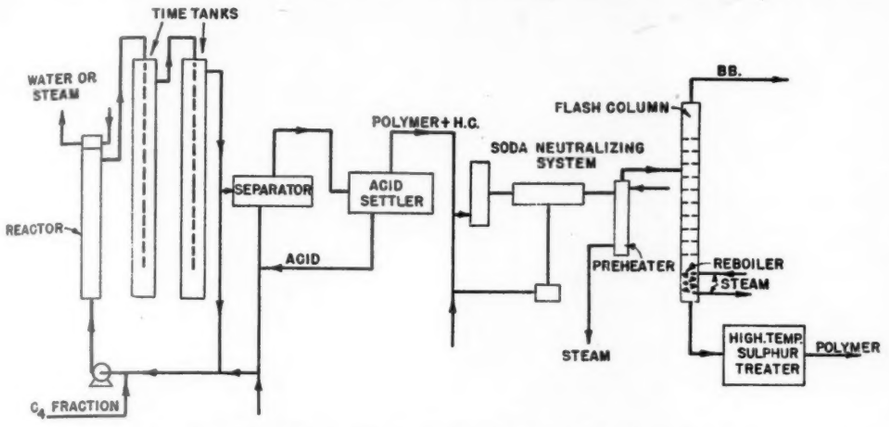


Fig. 2—Shell catalytic polymerization process. Hot-acid polymerization plant

An alternative method of hydrogenation is used in some plants where the sulfur in the feed is comparatively high. This method has been developed largely by the Standard of New Jersey. A sulfur-resistant molybdenum catalyst is used with pressures up to 3,000 lb. per sq. in. Hydrogen is usually prepared by the action of steam on methane, although any convenient source can be used.

The quality of the hydrogenated hot-acid dimers is exceptionally good and compares favorably with that of pure isooctane itself, both as to lead susceptibility and blending value.

U.O.P. polymerization.—Probably the most widely used polymerization process is that developed by the Universal Oil Products Co. The catalyst is composed of phosphoric acid impregnated into a carrier and it is capable of polymerizing not only butylenes but propylene and ethylene as well. The wide use of the process has led to some confusion regarding its application for the preparation of saturated aviation fuels of better than 90-octane number unleaded. It is only in the selective polymerization of C_4 fraction that a product comparable to hot-acid octanes or isooctane is obtained. Polymerization of *n*-butylene alone gives a polymer of less than 90-octane number which is not improved by hydrogenation. Polymerization of propylene yields a product which on hydrogenation has an octane number less than 70 A.S.T.M. Hydrogenated product of 96 or better octane number is obtained only when approximately equal quantities of butylene and isobutylene are reacted and thus the yield is the same as obtained in hot-acid operation.

A flow diagram of the U.O.P. selective polymerization (isooctane process) is shown[3] in Fig. 3. Refinery cracked C_4 fraction after washing with caustic is passed through a preheater and then to the reactors. The temperature in the reactor is from 150-180° C. and the pressure, 600-800 lb. After polymerization the hydrocarbon is distilled to remove the butanes and excess butylenes, and the polymer fractionated into a dimer and trimer cut. The dimer cut is then hydrogenated in a manner similar to that used for the hot-acid process.

The U.O.P. catalyst loses its activity with use due to carbon formation on the surface. It can be partially regenerated by controlled oxidation with air followed by rehydration with steam. . . .

Approximately 88-90 per cent of the polymer is dimer and on hydrogenation this gives a product of 96-97 octane number. Thus it is closely comparable to the hot-acid product in quality, provided, as was said, the *n*-butylenes reacted do not appreciably exceed in quantity the isobutylene reacted. A possible advantage of the U.O.P. process is its flexibility, for whereas the hot-acid process is limited to C_4 fraction and up to equal quantities of isobutylene and *n*-butylenes, the U.O.P. process may utilize a greater proportion of *n*-butylenes at a sacrifice in octane number. . . .

Liquid-phase phosphoric acid process (U.S.P. 2186021.)—A closely related process to that of the U.O.P. has been developed by the Standard Oil Co. of California. This also used phosphoric acid as a catalyst, but as a liquid rather than impregnated on a carrier. The necessary contact is obtained by passing 100 per cent phosphoric acid over quartz or glazed porcelain filler in a tower at 150-160° C. at atmospheric or relatively low pressures. . . .

Both this catalyst and that of the U.O.P. require that the feeds be freed of basic material such as amines. Pretreatments with water or dilute acid are provided for their removal (U.S.P. 2186031).

Polyco polymerization.—One further polymerization process . . . is the Polyco process. A plant has been built by the Standard Oil Co. of Ohio[3] and it is understood that others are contemplated. The catalyst used is copper pyrophosphate and it is cable of polymerizing not only butylenes but other olefins as well. While the plant of the Standard of Ohio is designed to run on mixed olefinic feed, it is understood that the process is capable of producing from C_4 fraction material of better than 90-octane number after hydrogenation.

The operating temperature is about 200° C. It will be seen that in principle it is the same as those using other solid catalysts with hydrocarbons in the vapor state.

Thermal polymerization has not been included in this discussion as the product is not comparable with those of the above processes.

From the foregoing, it will be seen that as far as producing isoparaffins of highly branched structure suitable for aviation gasoline is concerned, the field of polymerization is limited to the C_4 fraction and possibly tertiary amylenes present in C_5 fractions. Increasing demands for these products would require processes for the dehydrogenation of the corresponding saturates and considerable progress has been made in this direction, but commercial application of dehydrogenation has been arrested due to the successful application of alkylation processes whereby a paraffin is directly coupled with an olefin to produce a branched-chain isoparaffin in a single step.

Alkylation.—At the present time there are two successful commercial applications of the alkylation reaction. These are: (1) the catalytic sul-

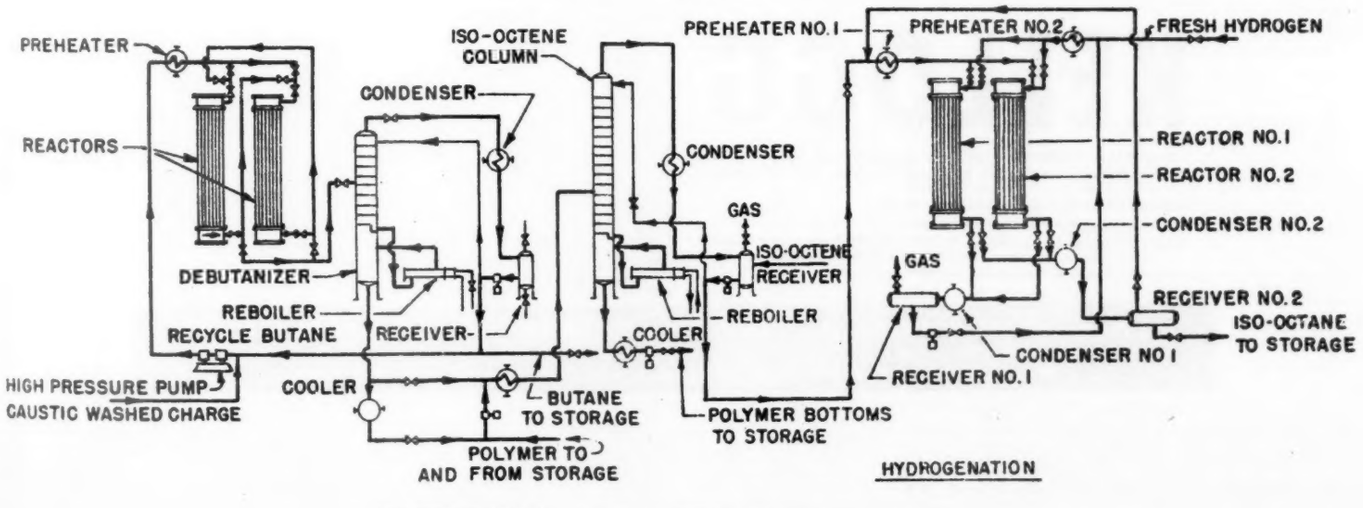


Fig. 3—U.O.P. isooctane process

Past, Present and Future are all considered in Kellogg-Built Units

Developments in refining are rapid. It no longer suffices to build a plant for today, it must be built with intelligent thought of the future. Those refiners who do the best job of planning today will be in the best position to take advantage of the developments of tomorrow.

The M. W. Kellogg Company is supplied with the essentials to assist in scientific refinery planning and construction. Its personnel comprises men of many years experience in research, design, construction and operation of refinery equipment in all parts of the world, with varying crudes, and for a wide range of products. In addition, through this organization the most advanced processes are made available to the refiner for converting available raw materials into a wide variety of profitable products.

For the solution of a present day refining problem or the formulation of plans for the future, consult The M. W. Kellogg Company.

KELLOGG

LICENSING AND CONSTRUCTION AGENTS under United States and foreign patents for:
Catalytic Processes for Cracking, Reforming, Dehydrogenation, Alkylation, Desulphurization

- Gasoline Products Company, Inc., Pyrolytic Cracking
- The Polymerization Process Corporation, Thermal and Catalytic Polymerization
- JUIK Processes for Lubricating Oil Refining with Propane and Phenol Desasphalting · Dewaxing · Solvent Extraction and Acid Treating Plants
- The Gray Processes Corporation, Clay Treating

THE M. W. KELLOGG COMPANY · JERSEY CITY, NEW JERSEY · 225 BROADWAY, NEW YORK
Los Angeles: 609 South Grand — Tulsa: Philtower Building
EUROPEAN REPRESENTATIVE: Compagnie Technique des Petroles, 134 Boulevard Haussmann, Paris, France.

fur acid alkylation process developed by the Anglo-Iranian Oil Co., Humble Oil Co., Standard of New Jersey, Shell and Texas Co., and (2) the thermal alkylation process of Phillips. Other catalytic processes involving aluminum chloride complex salts show promise but have not yet proved commercially applicable.[4]

Sulfuric acid alkylation.—The sulfuric acid alkylation process has been very well received by the industry and already is supplying large quantities of 100-octane aviation gasoline. Plants capable of producing in excess of 7,200,000 bbl. per year of 92-94-octane fuel (unleaded) have been built or will be completed in the next few months, and new installations are under consideration.

While the actual design of some of these plants may differ in detail, in principle they are fundamentally the same. The olefin (usually C_4 fraction) is premixed with an excess of isobutane and then is fed to an emulsion of acid and reacted hydrocarbon which is rich in isoparaffin but substantially olefin-free. In this way a large excess of isoparaffin is always present in the reaction zone and polymerization or hydropolymerization of the olefins is suppressed.

The actual reaction taking place is rather complicated and involves hydrogen transfer, isomerization and carbon to carbon cleveage, as well as alkylation, but a saturated product of high octane number is obtained in a single step. Thus the process offers distinct advantages over the polymerization hydrogenation reactions previously described.

In Fig. 4 a flow diagram of a typical plant is shown. It is essential that good mixing be obtained. In this particular design the requisite mixing is achieved by means of a circulating pump acting through additional reaction space in which intimate contact is maintained by the velocity of flow through jets and baffles. An alternative method is to provide a reactor with internal mixing and it is understood that at least one commercial plant has a unit of such design. . . .

The reacted hydrocarbon is separated from the acid, washed with caustic and stabilized. The excess isobutane is then separated from the *n*-butane and returned to meet the fresh olefin feed.

Sulfuric acid of 98 to 100 per cent strength is initially charged to the unit, and the acid is discarded when it reaches a titratable acidity of about 85-88 per cent. Acid may be removed batchwise or continuously. The presence of water, sulfur compounds, amines and dienes in the feed markedly reduces the acid life.

A major advantage of the sulfuric acid alkylation process is the great range of possible feed stocks. As has already been pointed out, if 100-octane fuels with reasonable amounts of lead are desired, only C_4 fraction is suitable for polymerization whereas, for alkylation, C_3-C_7 olefins and both isobutane and isopentane can be used. In Tables 2 and 3 are shown the conditions of operation and quality of product produced when alkylating isobutane with a variety of olefin feeds. Furthermore, by fractionation of the products it is possible to increase the octane number further by eliminating components of poor-octane number.

The actual operation of a plant is quite simple and with automatic-control instruments, little attention is required. Furthermore, at present the cost of the actual equipment included in the flow diagram is considerably lower than previously published figures.

Fig. 5 shows the octane number and lead susceptibilities of a few of the alkylation products as

TABLE 2—ALKYLATION WITH REPRESENTATIVE REFINERY OLEFIN FEED STOCKS

Olefin feed stock— (Per cent by weight of olefin)	C_3 fraction from cracking	C_4 fraction from cracking	Residual C_4 fraction from isooctane manufacture	C_5 fraction from cracking	70-160° F. end-point cracked gasoline	70-210° F. end-point cracked gasoline
Conditions:	*30	†48	‡24	55	52	50
Isoparaffin used	Isobutane	Isobutane	Isobutane	Isobutane	Isobutane	Isobutane
Mol ratio of isoparaffin to olefin	8	5	5	8	8	8
Makeup acid strength, per cent by weight of sulfuric acid	98-100	98-100	98-100	98-100	98-100	98-100
Volume ratio of acid to hydrocarbon ratio	1	1	1	1	1	1
Temperature, °F.	85	32-50	32-50	50	50	50
Contact time, min.	20-40	20-40	20-40	20-40	20-40	20-40
Titratable acidity of rejected acid, as per cent by wt. of sulfuric acid	88-90	88-90	88-90	88-90	88-90	88-90
Per cent by weight of yield of total alkylate based on olefin in feed	185	190-200	200-215	§134	§126	§115
Per cent by volume of total alkylate based on olefin in feed	138	158-166	168-180	§125	§119	§113
Aviation fraction (end point, 300° F.) in total alkylate, per cent	92-95	88-90	89-91	90	85	77
Makeup acid, lb. per gal. of total alkylate	2.6	1	<1	1.5	1.7	3.3

*With mixed C_3 and C_4 fractions, materially better results are obtained. †About 18 per cent isobutylene present. ‡Largely butylene-2. §Yield based on total refinery fraction, which includes saturates.

TABLE 3—PROPERTIES OF PRODUCTS FROM ALKYLATION WITH REPRESENTATIVE REFINERY OLEFIN FEED STOCKS

	C_3 fraction from cracking	C_4 fraction from cracking	Residual C_4 fraction from isooctane manufacture	C_5 fraction from cracking	70-160° F. end-point cracked gasoline	70-210° F. end-point cracked gasoline
Olefin feed stock						
Isoparaffin used	Isobutane	Isobutane	Isobutane	Isobutane*	Isobutane*	Isobutane*
Properties of total alkylate (C_7-free):						
Gravity, °A.P.I.	72.1	69.2	69.2	76.6	72.1	70.6
Bromine No., g. of bromine per 100 ml.	0.1-0.4	0.3-0.5	0.3-0.5	0.5-1.0	0.5-1.0	1-2
Sulfur, per cent	0.001	<0.001	<0.001	<0.005	<0.005	<0.005
Reid vapor pressur, lb. per sq. in.	4		3	8		
Octane No. (A.S.T.M.-C.F.R.)	88.0	91.5	92.5	87.0	83.0	79.0
A.S.T.M. distillation, in °F.—						
Initial boiling point	152	120	117	108	126	128
End point	387	403	378	446	455	414
10 per cent point	180	182	183	144	158	162
20 per cent point	185	199	203	164	169	176
30 per cent point	189	209	213	191	183	190
40 per cent point	192	217	221	222	201	208
50 per cent point	194	222	225	242	220	220
60 per cent point	198	230	228	253	236	236
70 per cent point	202	235	231	261	250	248
80 per cent point	212	242	236	277	270	266
90 per cent point	271	267	250	306	316	328
95 per cent point	345	340	314	368	374	385
Recovery, per cent	98	99	98.5	99	98	98
Recovered at 266° F., per cent	88	89.5	92	79	76	70
Properties of 300° F. end-point fraction:						
Unsaturation, per cent	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Sulfur, per cent	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
50 per cent point, °F.	190	220	221	209	200	205
Reid vapor pressure, lb. per sq. in.		3.5	3.0	9.0	11.6	7.4
Octane No. (A.S.T.M.-C.F.R.)	89	92	93	87	82	78

*Products not depentanized.

TABLE 4—COMPARISON OF ALKYLATION AND POLYMERIZATION FOR C_4 FRACTION FROM CRACKING

(Basis, 1 gal. of feed)

Feed composition, per cent by volume:	
Propane	1
Isobutylene	18
n-Butylenes	30
Isobutane	9
n-Butane	42
Total	100

Method used—	Cold-acid absorption and polymerization plus hydrogenation	Catalytic polymerization plus hydrogenation*	Catalytic high-pressure polymerization plus hydrogenation†	Alkylation
Additional isobutane, gal./gal. of feed	Nil	Nil	Nil	0.42
Product boiling below 300° F., gal.‡	0.11	0.25	0.32	0.73
Octane No. of saturated aviation cut (A.S.T.M.-C.F.R.)	99-100	96-98	91-93	92-94
Gallons of 87-octane fuel per gallon of feed prepared by blending aviation cut with 72-octane base stock§	0.21	0.42	0.43	1.02

*Either U.O.P. or hot-acid process operating for maximum octane number. †Operating for maximum yield. ‡Data are approximate. The yield depends somewhat on operating conditions. §Assuming straight-line function and motor-method octane numbers. ¶In general, refinery streams are richer in isobutane.

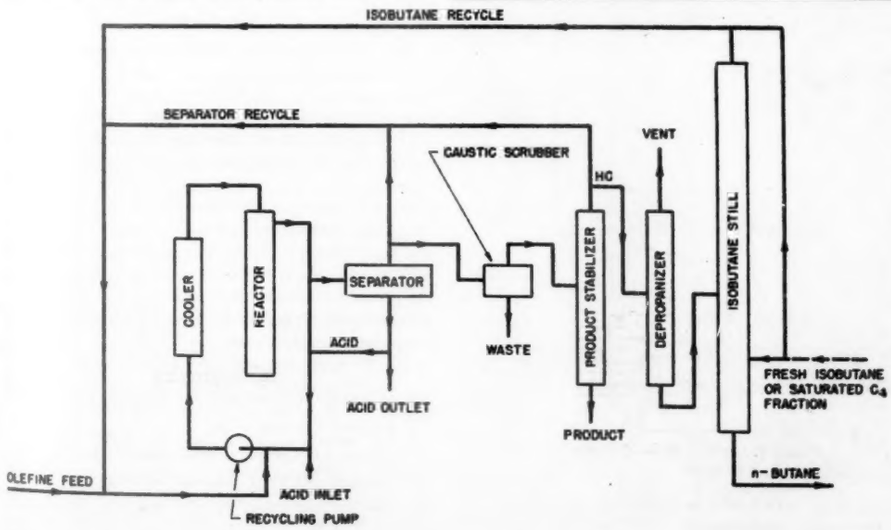


Fig. 4—Simplified flow diagram for alkylation plant. (Time-tank type)

compared to those obtained by either cold acid or hot acid or U.O.P. selective polymerization, while Table 4 shows the comparative yield based on 1 gal. of C_4 fraction. . . .

Thermal Alkylation

The sulfuric acid alkylation process is not at present capable of using ethylene or of reacting

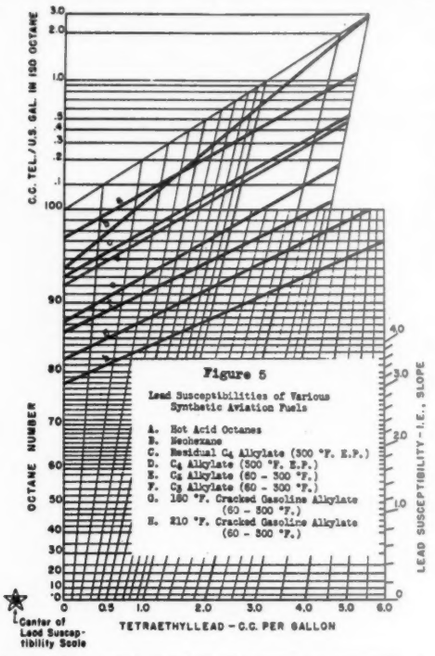

C.C. TEL./U.S. GAL. IN ISO OCTANE
OCTANE NUMBER
LEAD SUSCEPTIBILITY - I.E., SLOPE
TETRAETHYLLEAD - C.C. PER GALLON
Center of Lead Susceptibility Scale

Figure 5

Lead Susceptibilities of Various Synthetic Aviation Fuels

A. Hot Acid Octanes
B. Neohexane
C. Residual C_6 Alkylate (300 °F. E.P.)
D. C_4 Alkylate (300 °F. E.P.)
E. C_5 Alkylate (60 - 300 °F.)
F. C_6 Alkylate (60 - 300 °F.)
G. 180 °F. Cracked Gasoline Alkylate (60 - 300 °F.)
H. 210 °F. Cracked Gasoline Alkylate (60 - 300 °F.)

n-paraffins with olefins, whereas by thermal alkylation this appears to be possible. In fact, according to Oberfell and Frey of Phillips,[5] the preferred feed stock for thermal alkylation is ethylene and isobutane. When mixed gases are used, the product is of lower quality than that obtained from sulfuric acid alkylation and is primarily suited for motor fuel. Alkylation of isobutane with ethylene, on the other hand, does produce product of high octane number and should be considered in this discussion.

A flow sheet of a thermal alkylation plant is given in Fig. 6. An ethylene-isobutane mixture is pumped to a manifold which distributes it along about 10 inlets situated along a tubular coil through which a separate stream of isobutane of greater volume is continually circulated. The reaction temperature is about 510° C. and the pressure between 3,000-5,000 lb. per sq. in. The liquid reaction products are condensed out and the unreacted isobutane is recycled in a manner similar to that in sulfuric acid alkylation. . . .

The product consists of a wide variety of hydrocarbons and is not fully saturated as is the case with sulfuric acid alkylation. This is particularly true for the isobutylene and isobutane reaction. The results obtained with ethylene and isobutane appear to be the most attractive, the weight per cent yield based on ethylene being about 138 as compared to a theoretical yield of 300 weight per cent. Neohexane, 2,2-dimethyl butane, represents about 42.1 per cent of the liquid products.

In Table 5 are given inspection data on the products of the alkylation of isobutane by ethylene.[6] It will be seen that the crude alkylate has an octane number of only 82.5 and after separating out the neohexane fraction this drops to 78.4. Sample C represents product obtained by blending the neohexane fraction with the rest of the C_7 and C_8 alkylate and then adding 3 cc. of lead.

The most important property of neohexane is its lead susceptibility. This is compared with isooctane[7] in Table 6. As may be seen, neohexane shows a definitely higher lead susceptibility.

Attempts have been made to compare thermal alkylation with sulfuric acid alkylation. This is, of course, impossible on the basis of the ethylene-isobutane reaction product as sulfuric acid alkylation is not applicable to ethylene. With higher olefins and isoparaffins sulfuric acid alkylation appears to be definitely the superior. Furthermore, the use of lower temperatures and pressures and a cheap catalyst should make the initial cost and operating costs lower.

The overall efficiency of the thermal process for ethylene and isobutane still leaves much to be desired and undoubtedly a catalytic process by accelerating the reaction and allowing lower temperatures and pressures would lead to a considerable improvement.

The direction of the next step in the production of synthetic fuels is not known but it is safe to predict that the future holds much of promise.

TABLE 5—INSPECTION DATA FOR PRODUCTS FROM THERMAL ALKYLATION OF ISOBUTANE WITH ETHYLENE

Sample descriptions—	A Debutanized alkylate	B A, minus neohexane content	C* Neohexane volatility	D† Plus lower fraction
Octane number (A.S.T.M.)	82.5	78.4	100.2	99.6
A.P.I. gravity at 60° F.	73.2	67.7	76.6	75.6
Reid vapor pressure, lb. per sq. in.	7.3	6.9	6.9	6.4
A.S.T.M. distillation				
Per cent evaporation at °F.:				
First drop	118	116	128	129
5	129	136	134	139
10	136	149	139	146
20	142	158	143	150
30	146	166	146	154
40	151	175	151	160
50	157	186	156	164
60	166	199	166	176
70	180	215	179	193
80	206	236	200	209
90	268	273	217	221
95	310	325	222	230
End point	370	399	258	282
Sum of 10 + 50 per cent points	...	...	295	310

*A blend of 40 volumes of acid treated C_7-C_8 fraction (165°-243° F.) with 60 volumes of neohexane fraction. Octane rating is by A.S.T.M. method with 3 cc. TEL per gallon. †A blend of 50 volumes of acid treated C_7-C_8 fraction (165°-243° F.) with 50 volumes of neohexane fraction. Octane rating is by Army method with 3 cc. TEL per gallon.

TABLE 6—COMPARISON OF OCTANE NUMBER AND LEAD SUSCEPTIBILITY OF ISOOCTANE AND NEOHEXANE

	Octane No. (A.S.T.M. method)	TEL requirements to equal C.P. isooctane plus indicated TEL (A.S.T.M.) method			
		0.0 cc.	1.0 cc.	2.0 cc.	3.0 cc.
Neohexane (99 per cent pure)	94	0.25	1.35	2.25	3.0
Isooctane-normal heptane blend	94	0.30	2.90	4.85	6.35

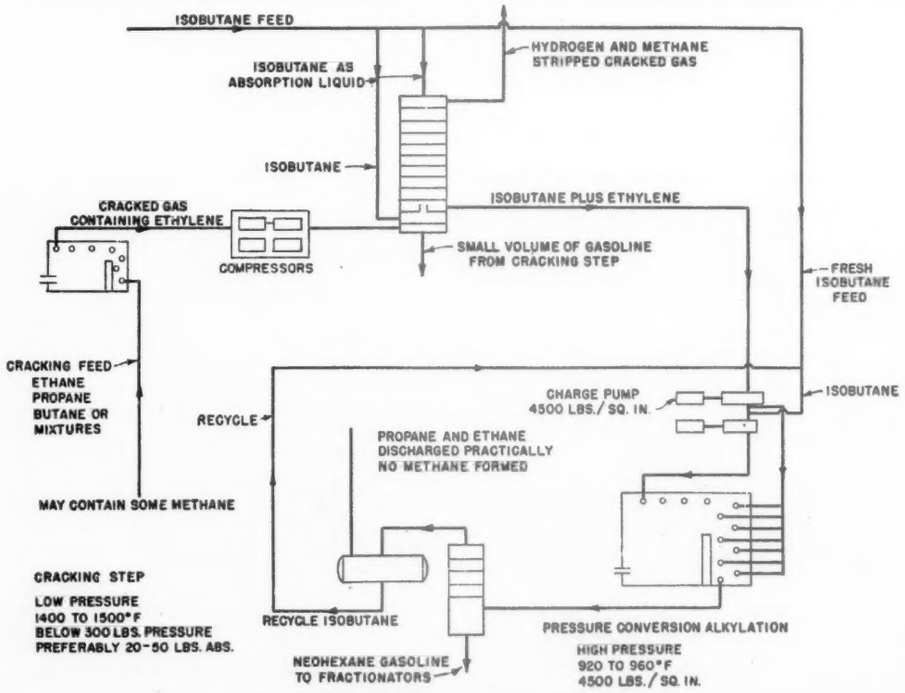


Fig. 6—Thermal alkylation. Neohexane pilot plant

Conclusion

The application of chemical research to petroleum refining during the past 6 years has brought about enormous advances in the production of synthetic aviation fuels of high octane number. At the present time there are available processes which can, by expansion to their known limitations, supply very large quantities of aviation fuel of better than 90-octane number with 3 cc. of lead. Thus the petroleum industry is prepared to meet the requirements of this nation for defense in the air. Furthermore, these processes represent true conservation in that they have turned gaseous by-products which formerly were of little value into very useful substances.

Bibliography

1. McAllister, Refiner Natural Gasoline Mfr. 16, 493 (1937).
2. Refinery Catalog, p. 407.
3. Nat. Petroleum News, June 26, 1940, p. 230.
4. Blunck and Carmody, Baltimore meeting of A.C.S., April 3-7, 1939.
5. Oberfell and Frey, The Oil and Gas Journal, 38, No. 28, 50, 1939.
6. Oberfell and Frey, The Oil and Gas Journal, 38 No. 29, 70, 1939.
7. Ibid., p. 73.

Preventing Air Pockets in Oil Gathering Lines By Use of Bleeders

By NEIL WILLIAMS

NECESSITY for bleeding off of air or free gas that might accumulate in pockets at high places in field gathering lines and cause locking or knocking has occasioned the design and use of many different kinds and descriptions of traps, vents, and relief valves. Some of these have been of commercial manufacture, but in many instances they have been improvised and fabricated, partly or wholly, by the operating companies.

Air or gas locks, occurring in lines not employing adequate bleeders or relief valves, can be a source of much trouble. In some instances the air or gas trapped at some point may reach sufficient volume and pressure to stop completely the flow of fluid and thus build up back pressure sufficient to stall the pump engine or motor. Under such circumstances it might be necessary to run a scraper or resort to some other difficult procedure to reopen the line. Although many times accumulation of air or gas will not stop bypassing of some of the fluid flow through the line, operation of pump and engines will be impeded, not to mention the fact that the line cannot deliver its maximum capacity. Partial locks also result in knocking and vibration.

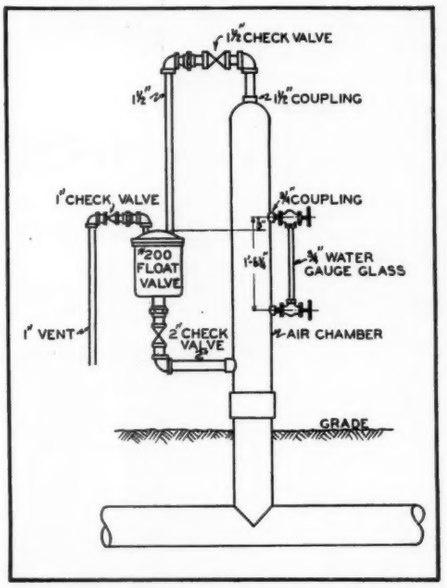
Most trouble occurs in the line on the discharge side of the pump. On the suction side, locks usually are not likely, but even there air or gas in the line can cause knocking and vibration.

Sources of Air

Air or gas in a gathering line can come from various sources, but usually is the result of pumping a tank down too low. The latter is a practice operators seek to avoid, but which many times cannot be prevented without keeping constant watch on the tank. With gathering-line pump installations in which the engines or motors are equipped with clock controls for starting and stopping them automatically, there possibly is added chance of pumping a tank too low, as the automatic controls are provided to eliminate the necessity of operators coming around to start and stop the pumps. Thus, in a case in which a tank might be pumped down in less than the set operating time, the pump would continue to run, pulling air into the line.

Operators, however, probably would not provide time controls to start and stop pump engines unless the gathering system were equipped with adequate air bleeders or relief valves. The chance of trapping of air or gas and locking is present especially in lines laid over terrain in which there are sharp rises and falls in elevation. However, even in lines in more or less flat country there usually are places that are sufficiently high to permit accumulation of air or gas if bleeders are not provided.

An unusually effective air-relief device has been designed by Humble Oil & Refining Co. and has been installed by this company on its gathering systems in several fields. The device is shown in



Drawing of air-relief valve and bleeder designed by Humble Pipe Line Co. for gathering-line use

an accompanying drawing and picture. The picture is of an installation on a rotary pump in the East White Point field, San Patricio and Nueces counties, Texas Gulf Coast, while the drawing is of a typical line installation.

The essential parts of this bleeder consist of an air chamber, and a float-controlled relief valve. The latter is of a commercially manufactured type. The air chamber is fabricated from a section of pipe, in these instances 4-in. in diameter and from 4½ to 5 ft. in length. However, the size and length do not have to conform to these dimensions.

Installed, the air chamber is set vertically on the top of the line or pump. On pump installations the mounting is on the line immediately at the systems in several fields. The device is shown in discharge end, the bottom end of the air chamber fitting into a swedge-nipple connection. On line installations, the bottom end of the chamber fits into the top of a short riser section welded onto the top of the line. The float-valve chamber is mounted at the side of the air chamber with a 1½-in. overhead air line from the top of the air chamber and a 2-in. fluid-equalizing line from the bottom to the lower part of the air chamber.

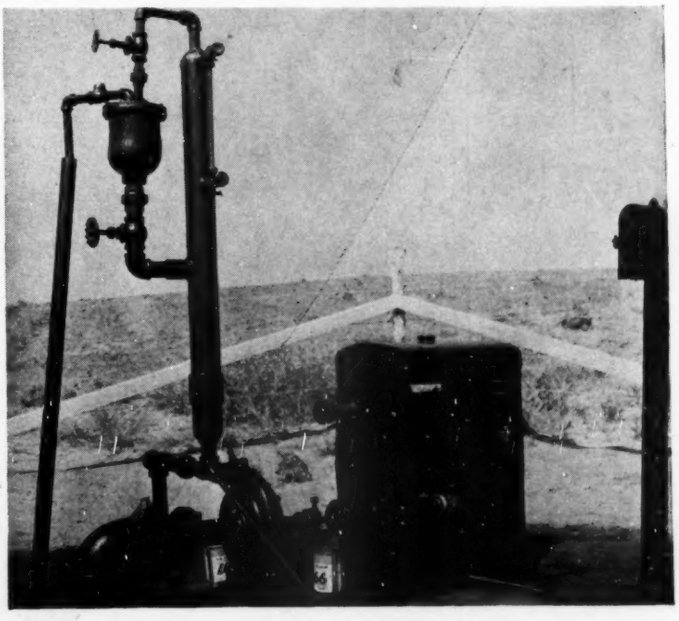
In operation, air or gas in the line rises through the fluid column to the top of the air chamber. As the accumulation and pressure increases, the fluid level in the chamber is lowered. The fluid levels in the air chamber and the float-valve chamber being equalized, the lowering of the float control in the float-valve chamber opens the air-relief valve, venting the air or gas. With venting of the air or gas, and relief of pressure, the fluid level in the chambers again rises, closing the air-relief valve.

Check Valves Prevent Bypassing

As a precaution against the air or gas bypassing the vent line from the float chamber and returning to the air chamber through the bottom fluid-equalizing line, a back-pressure check valve is placed in the latter line. In the same way, a back-pressure check valve is placed in the air line at the top to prevent bypassing of fluid from the float chamber to the top of the air chamber.

The air chamber is equipped with a glass level gage to permit observance of the fluid level in the event trouble should arise.

Installations of the bleeder are made at various places on the gathering line as needed for the relief of air or gas pressure, and also on the gathering-line pump, as described. As shown in the accompanying picture, the rotary gathering pump on the East White Point system is driven by a gas engine with a time-control device for starting and stopping. The clock control operates a regulator valve on the gas-feed line to the engine. At set times, the clock will open the gas feed valve, starting the engine, and in the same way close the feed.



Air-relief-valve installation on Humble Pipe Line Co. gathering-line pump in East White Point field, San Patricio and Nueces counties, Texas Gulf Coast

HERE'S *High Speed*

SERVICE

that can

TAKE THE LOAD

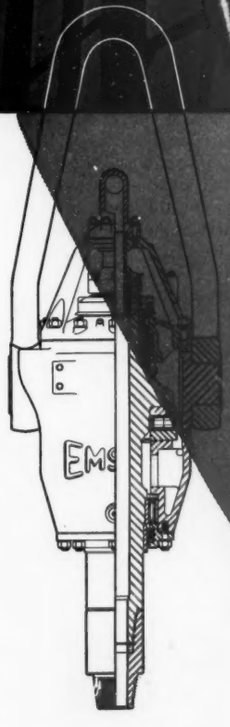
on the

DEEPEST WELLS

EMSCO

TYPE H

SWIVELS



Modern high speed drilling demands a swivel to withstand tremendous loads. Today, the Emsco Type H Swivel has the most modern design. Two radial roller bearings located as far apart as possible, one above and one below the main bearing, maintain proper sleeve alignment. This design also provides equal distribution of load on the main bearing.

The swivel body is a heavy one-piece casting, rigidly supported at points of stress. Loads are taken directly on this housing without passing through bolts, avoiding distortion and leaks. The oil reservoir is exceptionally large, completely submerging all bearings. A sealed, mud "blow-out" bonnet protects against the entrance of foreign matter.

There are many other features of the Emsco Type H Swivel that mean longer life and low upkeep to you. Ask for descriptive literature from any Continental salesman.

THE CONTINENTAL SUPPLY CO.
General Offices: DALLAS, TEXAS
Foreign Sales Subsidiary of
CONTINENTAL EMSCO CO., Inc.
30 Rockefeller Plaza — New York City, New York
Representatives:
LONDON MARACAIBO TRINIDAD BUENOS AIRES

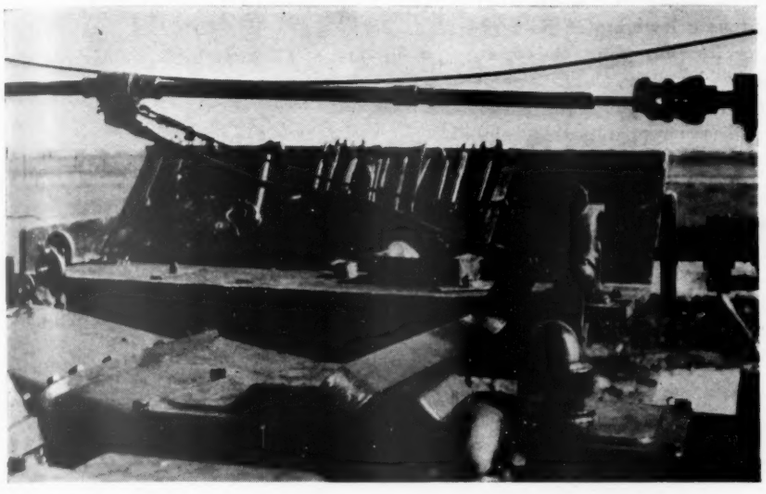
CONTINENTAL

"SERVING THE OIL AND GAS INDUSTRIES"

Operating Ideas

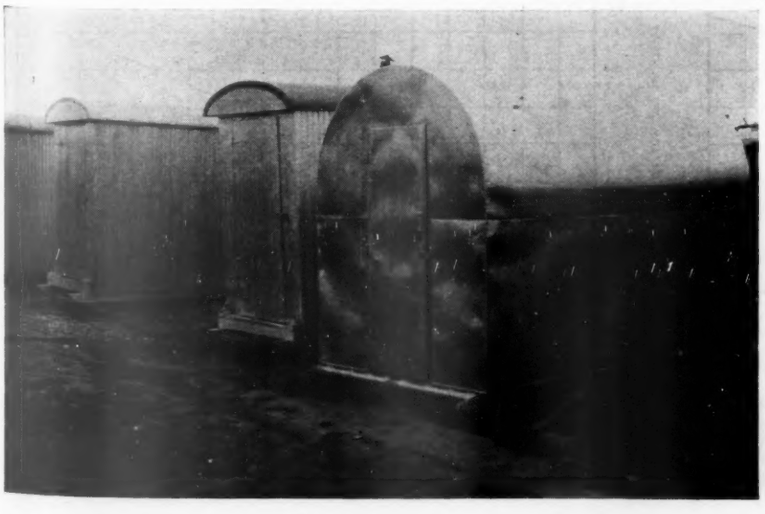
Safety Line on Throttle Hookup

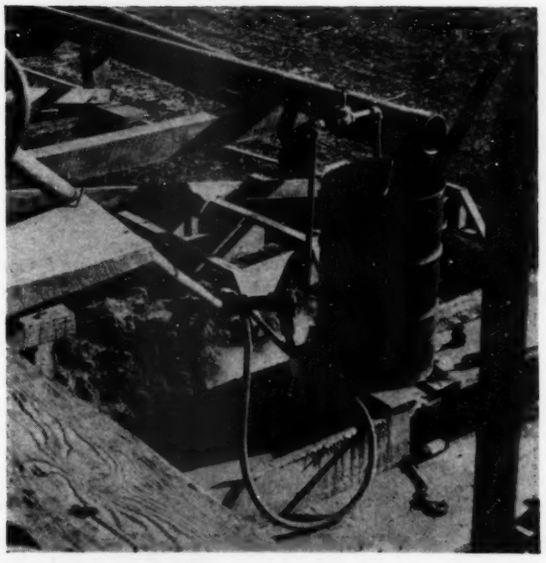
Even with frequent inspection, occasional failure of some important bolt or other connection in the linkage between driller's control and the drilling engine can cause a runaway engine for long enough to cause serious damage and perhaps serious injury to personnel. One driller supplements the usual linkage with a short length of flexible wire line, splicing it into the upper bolt hole of the reversing lever and around the bracket riding the throttle-rod extension. In case of the breaking of any part in the normal hookup, with the wire line it is possible to bring the engine to dead center on the valve travel, and thus stop it immediately—this assuming that the linkage rupture occurred simultaneously with parting of the universal joint on the throttle-valve stem, as happened in at least one instance.



Dog Houses for Pipe-Line Gagers

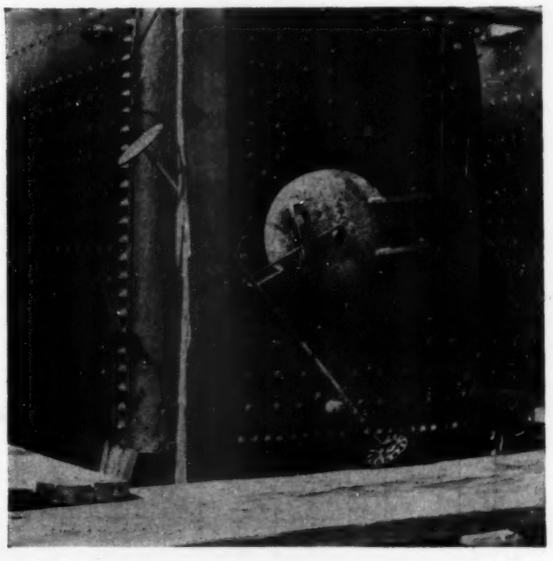
Where a central office is not provided for pipe-line switchers, some shelter must be available where run tickets can be made out and other bookwork performed. One pipe-line company operating in Illinois has adopted the use of small dog houses for this purpose. These are moved into the active areas and provide an office for the gagers; when the field declines, the dog house can be easily removed to another area. The steel house on the end is intended for a gang headquarters on a construction project.





Extension Wheel for Makeup Water

By extending one plank of the derrick floor and mounting thereon an extension of the valve stem on the line furnishing dilution water for the outflowing mud stream, close regulation of the water thus added to the mud may be maintained without it being necessary to leave the working floor.



Extension on Control Valves

By inclining the fuel-control valve stem at about 45°, it is possible to attach an extension with supplemental wheel so that the fireman can observe the flame within the firebox without himself being directly exposed to searing radiation from the fire. With the extension handwheel carried to the side of the boiler, the fireman may remain erect, and is under much less danger from flareback than were he crouching before the door. He is, however, close enough to be able to check combustion over the entire spread of burners.

Study of Plumbite Solutions Used in Petroleum Refining

By ALEX STEWART and C. E. CORRISS
Research Engineers, National Lead Co.

SUMMARY

Certain metallic oxides were studied in an endeavor to increase the solubility of litharge in the preparation of sodium plumbite solutions. These oxides, when dissolved in caustic soda solutions, cause a lowering of the crystallization or freezing point, thus producing stabilized sodium plumbite solutions of high lead concentration. These agents stabilize supersaturated solutions of sodium plumbite as either molecular or colloidal dispersions.

FOR the purpose of doctor sweetening, it has long been desired to produce sodium plumbite solutions with greatly increased lead contents at ordinary working temperatures.

A persistent source of trouble to the refiner has been the presence of sulfur, and particularly mercaptan sulfur, in light petroleum distillates. This has caused many investigations to be undertaken.

It is known that many forms of sulfur occur in gasoline. They may be classified as follows:

Mercaptans	RSH
Hydrogen sulfide	H_2S
Elementary sulfur	S
Disulfides	R_2S_2
Sulfides	R_2S
Thiophenes	C_4H_4S

Doctor sweetening is concerned solely with the first three, since they are the only ones affected by plumbite solutions.

Mercaptans are present, to some extent, in all raw light distillates. They are undesirable because of their foul odor, and except for hydrogen sulfide, they are the only form of sulfur which is positive to the doctor test. Any distillate containing mercaptans is sour. Sweet gasoline, or one negative to the doctor test, results from the complete removal of mercaptans or by their conversion to a form having an agreeable odor.

Doctor Sweetening

The most common method of sweetening is the conversion of the mercaptans to disulfides by mixing the sour distillate with sodium plumbite solution and oxidizing the mercaptans to disulfides by means of elementary sulfur.

Sodium plumbite solution is made by dissolving litharge in aqueous sodium hydroxide according to the following equation:

$$PbO + 2\,NaOH \rightarrow Na_2PbO_2 + H_2O \qquad (1)$$

This reaction only takes place when an excess of sodium hydroxide is present.

The mechanism of the doctor-sweetening process is generally described as follows:

$$2\,RSH + Na_2PbO_2 \rightarrow Pb\begin{matrix}RS\\RS\end{matrix} + 2\,NaOH \qquad (2)$$

$$Pb\begin{matrix}RS\\RS\end{matrix} + S \rightarrow PbS + R_2S_2 \qquad (3)$$

In Equation 2 the conversion of mercaptans to mercaptides is quantitative. The lead used to form the mercaptides is converted to lead sulfide by the elementary sulfur added.

This formation of lead sulfide gradually exhausts the doctor solution until it becomes necessary to regenerate it. This can be done fairly easily, it appears, provided some lead still remains in solution in the caustic soda. If the doctor is so far exhausted that no lead is in solution, side reactions take place in the sweetening process, and the spent doctor solution becomes difficult or impossible to regenerate.[1] The most generally accepted reaction for the regeneration of the doctor solution is:

$$2PbS + 6\,NaOH + 2O_2 \rightarrow 2\,Na_2PbO_2 + Na_2S_2O_3 + 3\,H_2O \qquad (4)$$

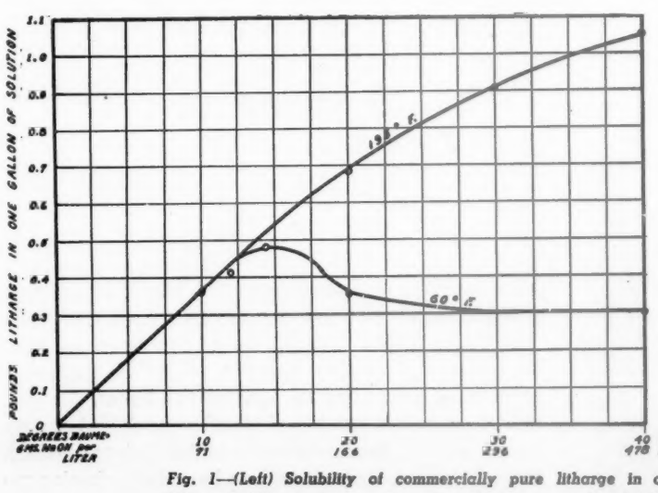
Since this paper deals essentially with factors which render litharge more soluble in sodium hydroxide solutions at normal working temperatures, a study must be made in greater detail than is generally undertaken in papers of this type.

Solubility of Litharge in Sodium Hydroxide Solutions

Referring to Fig. 1, it is seen that at 195° F. the solubility of a commercially pure litharge increases with increasing strength of the sodium hydroxide solution. If, however, these solutions are allowed to cool to 60° F. much of the litharge they contain will separate from the cooled solution as pure or hydrated lead oxide. The amount of litharge which will be retained in solution at 60° F. will increase with increasing alkali strength until a maximum is reached. There has, heretofore, been some confusion as to just where this occurs.

Some investigators have reported the caustic strength at which maximum lead retention occurs to be as low as 10° Be., others have found it to be as high as 25° Be. Since they have not indicated the compositions of the litharges used and since they seem to have been unaware of the pronounced influence which small quantities of certain metallic oxides exert upon the retention of litharge in cooled plumbite solutions, these discrepancies may be explained.

The amount of litharge which will be retained at 60° F. in a sodium plumbite solution prepared from a commercially pure litharge will increase with increasing caustic soda strength until the latter reaches 14° Be. In stronger caustic soda solutions the lead retention or solubility decreases sharply at first, and then more gradually until at



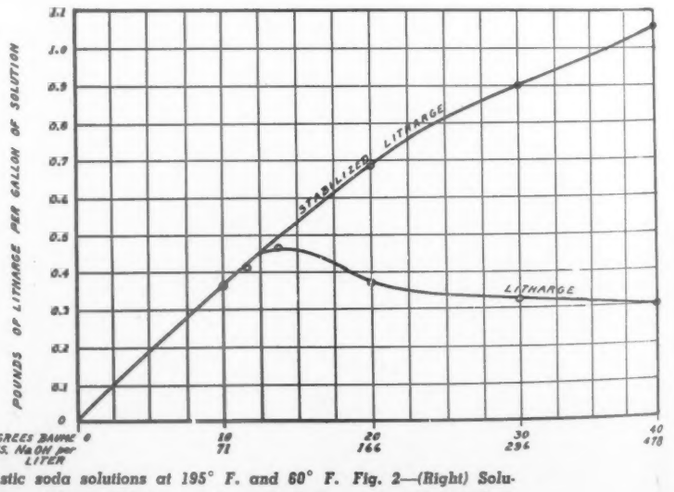


Fig. 1—(Left) Solubility of commercially pure litharge in caustic soda solutions at 195° F. and 60° F. Fig. 2—(Right) Solubility of litharge in caustic soda solutions—pounds of litharge retained. Solutions made at 195° F. and cooled to 60° F.

To obtain the high efficiencies demanded by current refining methods, greater equipment investments than ever before are being made. The shrewd refiner knows that operation at over-rated capacities, so often necessary, usually results in excessive maintenance costs. Shut-downs due to corrosion, coking, plugging and scaling not only increase costs, but definitely endanger refinery equipment investments because of the excessive depreciation factor. It is obvious, therefore, that *Petreco protection pays.*

The Petreco Electromatic De-Salting Process increases on-stream time by reducing shut-down periods to minimum. Operating difficulties and maintenance problems due to salt corrosion, plugging and scaling have been eliminated in many refineries. In one case, gains attributable directly to the PETRECO PROCESS are estimated at 150% per year on the desalter equipment investment. The Petreco research and engineering facilities are always at your disposal for tests and analyses of your problems. There is no charge or obligation for this service.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA

General Offices: 530 West Sixth Street, Los Angeles, California

Gulf Coast Division:
1312 Petroleum Bldg., Houston, Texas

Eastern Division:
648 Edison Bldg., Toledo, Ohio

Representatives In Principal Oil Fields and Refining Centers

PETRECO

DE-SALTING DEHYDRATING

a caustic soda strength of about 30° Be. the solubility approaches constancy.

Refinery Routine

The usual refining practice is to use caustic soda solutions of from 15° to 30° Be. strength in preparing doctor solutions; the refiner is, therefore, not able to utilize his caustic soda with the greatest efficiency because he is working just outside the range of the greatest dissolving power of the caustic soda solutions. Because it seemed desirable to increase this dissolving power, much work has been done to produce more concentrated litharge solutions in caustic soda.

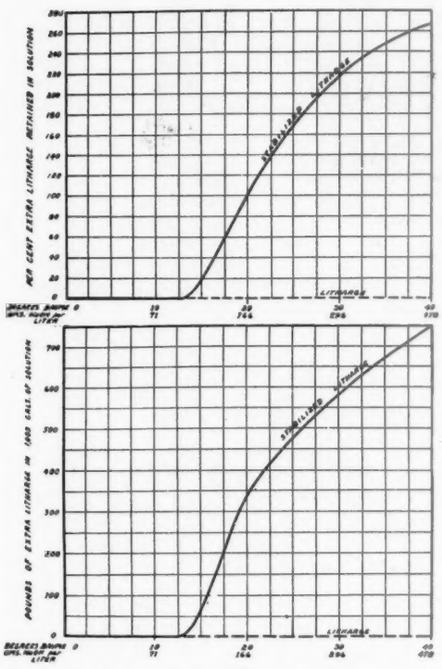


Fig. 3—(Top) Per cent extra litharge retained in stabilized solution at 60° F. Solution made at 195° F. and cooled to 60° F. Fig. 4—(Bottom) Pounds of extra litharge in 1,000 gal. of stabilized solution. Solution made at 195° F. and cooled to 60° F.

Many materials have been studied in the attempt to increase the solubility of litharge in the stronger caustic soda solutions. These have included various metallic oxides, salts of organic acids, sugars, alcohols, and so on; but their uses have not been entirely successful because of impermanent stabilizing effect. In turn, this may come about because the stabilizing compound adversely affects the doctor reaction, or because the stabilization was not obtained in regenerated doctor solutions. Of the metallic oxides, those of the fifth group and eleventh series, of the periodic table have been found to be effective and of these antimony is the most satisfactory.

Fig. 2 shows comparison between the retention of lead in plumbite solutions which have been stabilized with antimony and the retention of lead in unstabilized plumbite solutions.

Comparing Figs. 1 and 2 the curves are for all practical purposes congruent. This means that these substances do not actually increase the solubility of litharge in caustic soda, but, at the lower working temperatures, they stabilize as supersaturated solutions, the stronger ones obtained at the higher temperatures of preparation. It is not quite clear just how these stabilizing agents accomplish their purpose. Perhaps the best explanation is that they poison the crystallization of the litharge; that is, they keep the embryonic crystals from growing to a size greater than would be compatible with the conditions for either molecular or stable colloidal dispersions. In other words, all litharges have the same solubility in sodium hydroxide solutions at 195° F. and these solubilities can be retained for long periods of time at 60° F. by using antimony as a stabilizing agent.

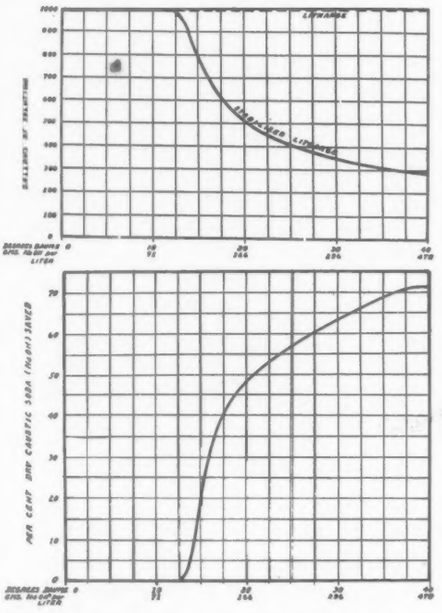


Fig. 5—(Top) Gallons of solution with equal lead content. Solutions made at 195° F. and cooled to 60° F. Fig. 6—(Bottom) Per cent dry caustic soda saved by using reduced amount of stabilized solution with same lead content as greater amount of unstabilized solution. Solutions made at 195° F. and cooled to 60° F.

From Fig. 2 it will be noticed that the solubility curve of the unstabilized plumbite solutions passes through a maximum at a caustic strength of about 14° Be. and thereafter more or less steadily decreases to a minimum at a caustic strength of approximately 40° Be. Quite the opposite happens with the antimony-stabilized solutions. Here the amount of litharge retained in solution at 60° F. increases with increasing caustic soda strength. The effect in terms of percentage of excess litharge retained in the stabilized solutions as compared with unstabilized solutions is shown in Fig. 3.

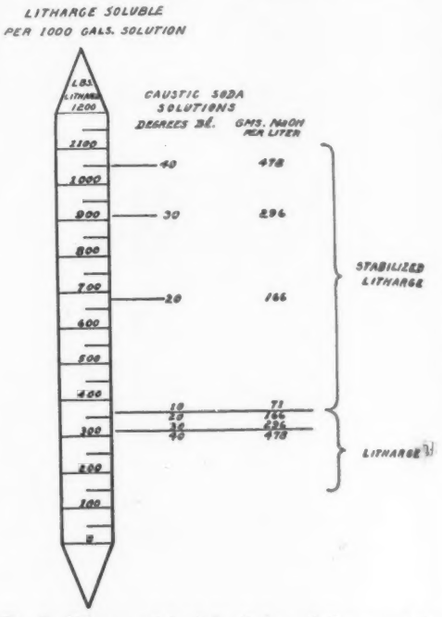


Fig. 7—Litharge retained in doctor solution saturated at 195° F. and cooled to 60° F.

Fig. 4 shows the number of pounds of extra litharge available per 1,000 gal. of stabilized solutions, while Fig. 5 shows the volume relationship between stabilized and unstabilized litharge solutions on the basis of equal lead content. Fig. 6 shows the amount of caustic soda which can be

(Continued on Page 61)

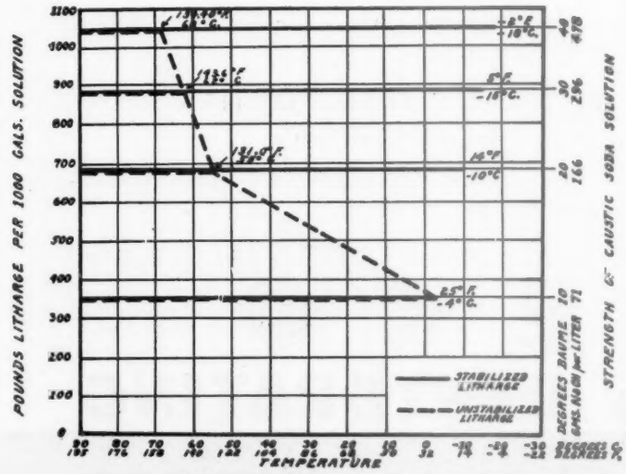


Fig. 8—(Left) Crystallization point.

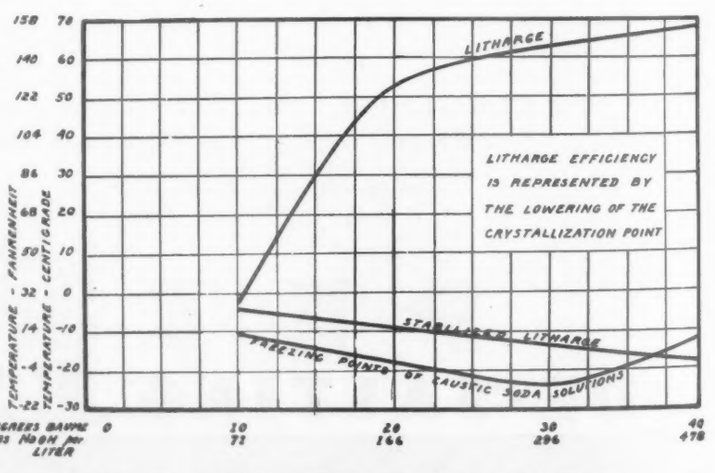
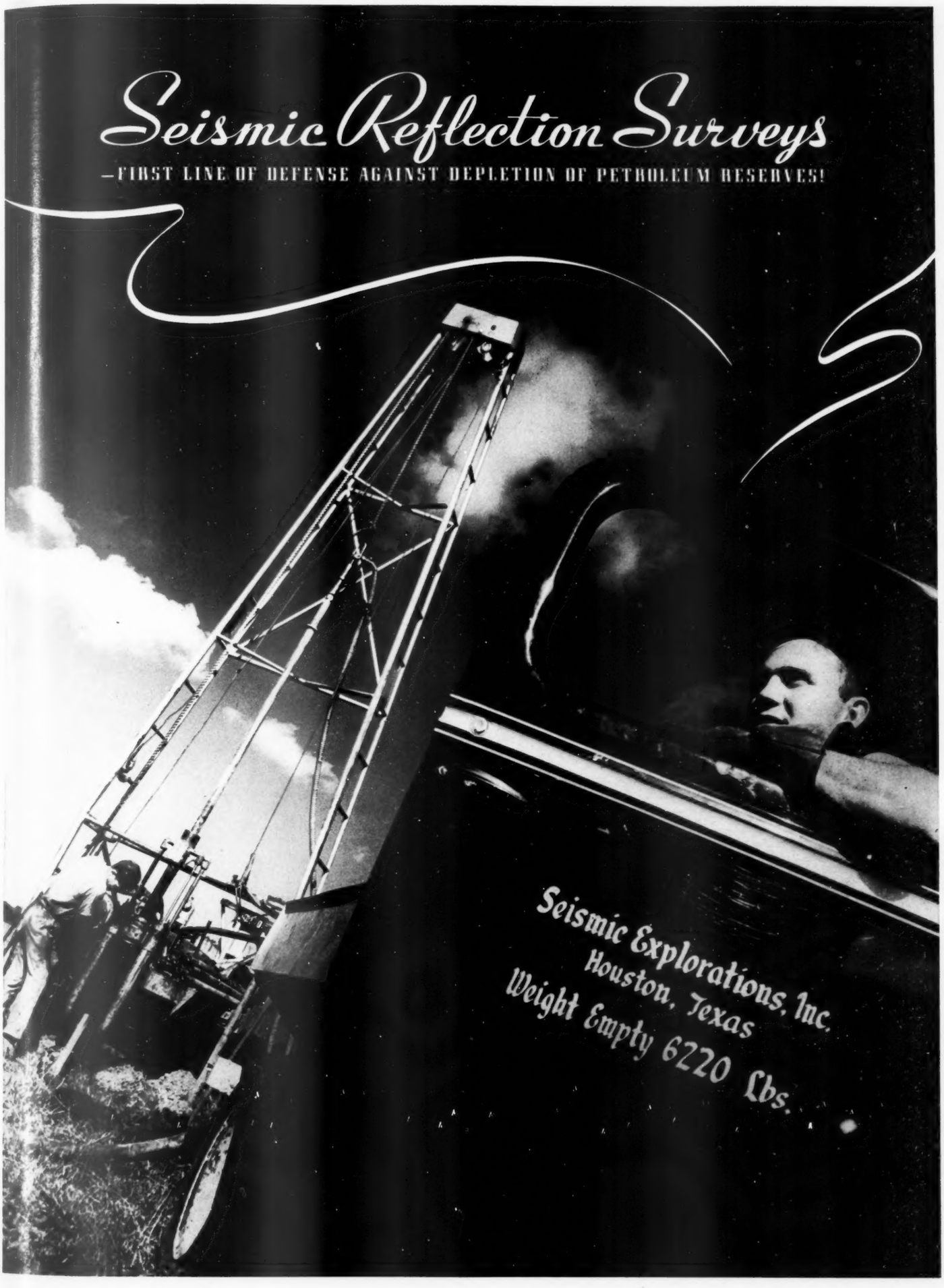

LITHARGE
LITHARGE EFFICIENCY IS REPRESENTED BY THE LOWERING OF THE CRYSTALLIZATION POINT
STABILIZED LITHARGE
FREEZING POINTS OF CAUSTIC SODA SOLUTIONS
TEMPERATURE - FAHRENHEIT
TEMPERATURE - CENTIGRADE
DEGREES BAUME
GMS NaOH per LITER

Fig. 9—(Right) Crystallization points of plumbite solutions. Solutions made at 195° F. and cooled to 60° F.

Seismic Reflection Surveys

—FIRST LINE OF DEFENSE AGAINST DEPLETION OF PETROLEUM RESERVES!



WELL LOGS and FIELD DATA . . . . of Active Oil Areas

Central South Louisiana

(Compiled by The Oil and Gas Journal)

LOCATION: The area covered by this survey includes Rapides, Avoyelles, St. Landry, Evangeline, and Allen parishes, Louisiana. The eastern border lies along the Atchafalaya River.

COMMUNICATIONS: Rail connections: Several railroads traverse the region, including main lines of the Missouri Pacific, the Kansas City Southern, and the Southern Pacific. The Rock Island, Santa Fe, and Texas & Pacific also serve the district.

Road connections are good, particularly in the western part of the area where there is easy access to St. Charles, Alexandria, and other centers at all times. In the eastern part of the district, floods are apt to interfere with travel at certain times.

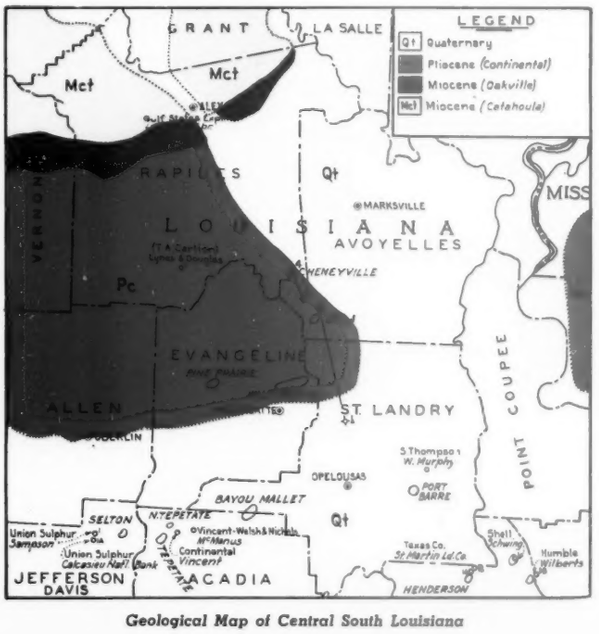
TOPOGRAPHY: The district lies along the western side of the Mississippi flood plain and is very flat. Much of the eastern part is covered by swamps and bayous connected with the Atchafalaya River. The western part of the area is heavily wooded and well drained.

TOWNS: There are no large towns in the district, but Baton Rouge (33,000), Alexandria (28,000) and Lake Charles (22,000) are within easy driving distance. The largest town in the district is Opelousas (6,000).

GEOLOGY: A great part of the area is underlain by freshwater deposits and terrace deposits of Quaternary or Recent age. These are practically featureless, so far as structural evidence is concerned. Beneath the Quaternary are Pliocene and Miocene coastal-plain deposits and these, too, are not easily traceable.

The district lies near the north edge of the belt of coastal salt domes and only two structures of this type, Pine Prairie and Port Barre, were found in the region.

The great bulk of the sedimentary column underlying the area consists of coastal-plain deposits of Tertiary age, many of which grade from marine to continental from south to north. Other sand bodies pinch out to the north, and these wedge edges are very productive, especially when found associated with structural uplifts.



Geological Map of Central South Louisiana

Correlations in this area were carried on to a great extent by means of micropaleontology until the development of the electric log. Hence many of the horizons are known by the names of their index fossils, particularly in the case of those zones which do not outcrop in the form in which they are found in the subsurface.

DEVELOPMENT: Development in the area has followed four main trends. The first was the search for salt domes with considerable geophysical prospecting. Then it was found that certain zones in the Miocene and Oligocene would produce along wedge edges and on minor structures. These zones include the Discorbis, Heterostegina, and Marginulina zones. Bosco, which was discovered in 1933, is of this type. Then operators in Texas found similar production along the Sparta trend, and this trend was projected into Louisiana, resulting in the discovery of Ville Platte. Finally, the Wilcox trend was also developed and Eola was found, followed by deepening of wells in Ville Platte and the discovery of a large Wilcox reserve.

FIELDS: Of the more important fields, Bosco has an estimated ultimate recovery of 50,100,000 bbl., or 33,500 bbl. per acre; Eola, 70,000,000 bbl., or 36,000 bbl. per acre; Ville Platte, 37,200,000 bbl. from the Sparta sands, or 25,000 bbl. per acre, and 40,000,000 bbl. from the Wilcox or 23,000 bbl. per acre; and Port Barre, 16,000,000 bbl., or 30,000 bbl. per acre.

POTENTIALITIES: Based upon the known distribution of similar fields in other parts of Louisiana and Coastal Texas, it is entirely possible that as many similar fields will be discovered in the future in the area as in the past. Relatively few wells have gone to the Wilcox and the trend is far from outlined.

In addition to the sands referred to, the Cockfield produces at Cheneyville, although this field is not of major importance. The Vicksburg and Jackson produce at Port Barre and it is to be expected that deeper sands will also prove productive.

Little production is expected from the Midway, which underlies the Wilcox formation, and it may be several years before the potentialities of the underlying Cretaceous can be explored due to the depth at which it lies.

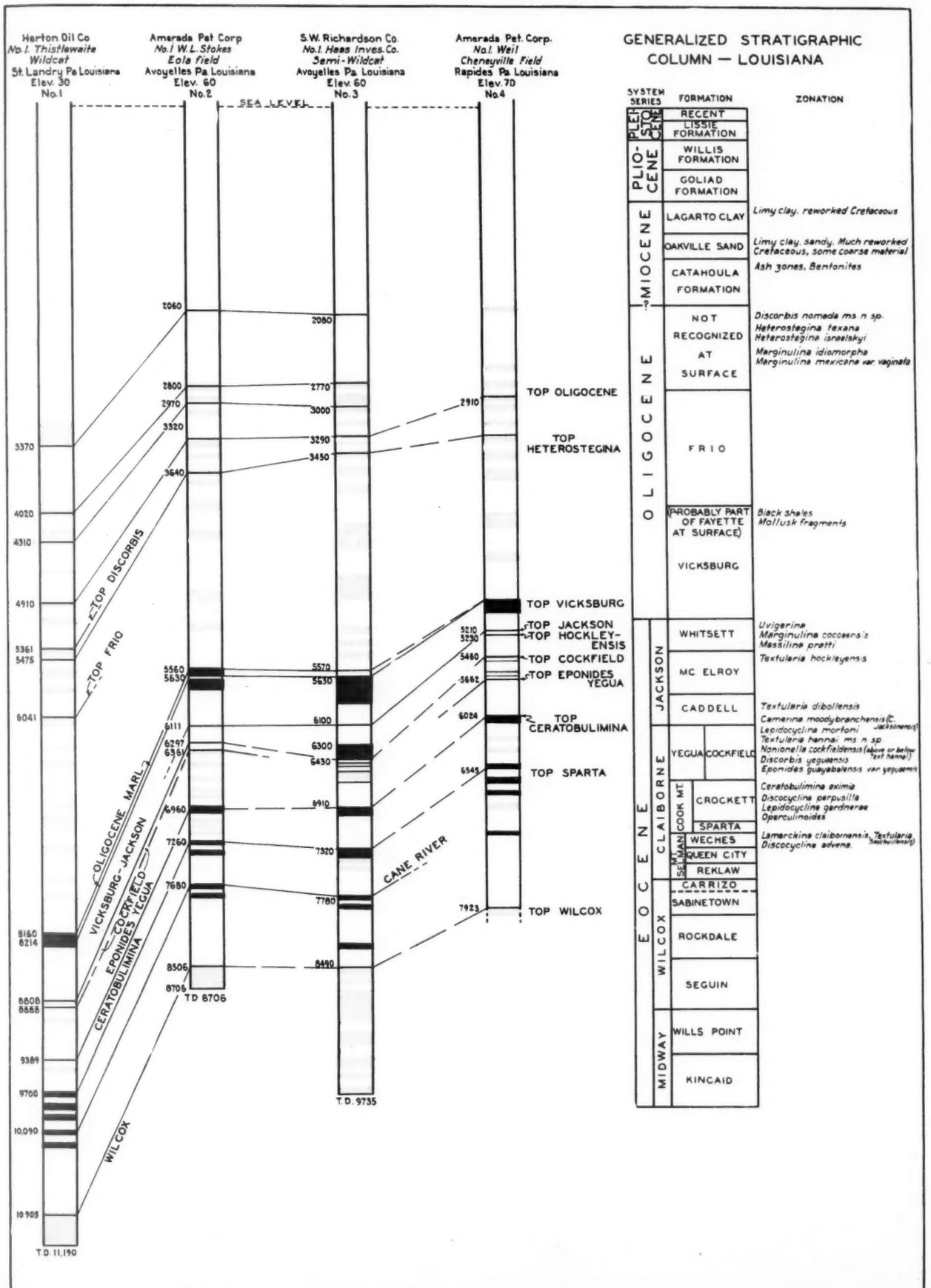
It is generally agreed that much of the lack of success which has attended past efforts to locate structures on the Sparta-Wilcox trend has been due to lack of detailed geophysical work. Structures such as Eola and Ville Platte are much harder to find than the old domal-type structure and require much more careful search.

Moreover, it has also been found that one dry hole does not condemn an area on which the seismograph has shown favorable evidence and many structures which were previously condemned by a dry hole will repay careful rechecking and redrilling.

Recent work has indicated that the magnetometer shows such structures as Eola very definitely so that a valuable check on the seismograph is afforded by this method.

WATER: Water for drilling and other purposes is obtained from shallow wells.

ELECTRIC POWER: Most of the towns have power available, although many companies operating in the region find it necessary or preferable to generate their own electricity.


Herton Oil Co
No.1 Thistlewaite
Wildcat
St. Landry Pa Louisiana
Elev. 30
No.1
Amerada Pet Corp
No.1 W.L. Stokes
Eola Field
Avoyelles Pa Louisiana
Elev. 60
No.2
S.W. Richardson Co.
No.1 Hess Inves. Co.
Semi-Wildcat
Avoyelles Pa. Louisiana
Elev. 60
No.3
Amerada Pet. Corp.
No.1 Weil
Cheneyville Field
Rapides Pa. Louisiana
Elev. 70
No.4
SEA LEVEL
TOP DISCORBIS
TOP FRIO
OLIGOCENE MARL
VICKSBURG-JACKSON
COCKFIELD
EPONIDES YEGUA
CERATOBULIMINA
WILCOX
CANE RIVER
TOP OLIGOCENE
TOP HETEROSTEGINA
TOP VICKSBURG
TOP JACKSON
TOP HOCKLEY-ENSIS
TOP COCKFIELD
TOP EPONIDES YEGUA
TOP CERATOBULIMINA
TOP SPARTA
TOP WILCOX
T.D. 8706
T.D. 9735
T.D. 11,190
GENERALIZED STRATIGRAPHIC COLUMN — LOUISIANA
SYSTEM
SERIES
FORMATION
ZONATION
PLEISTOCENE
RECENT
LISSIE FORMATION
PLIOCENE
WILLIS FORMATION
GOLIAD FORMATION
MIOCENE
LAGARTO CLAY
Limy clay, reworked Cretaceous
OAKVILLE SAND
Limy clay, sandy. Much reworked Cretaceous, some coarse material
CATAHOULA FORMATION
Ash zones, Bentonites
OLIGOCENE
NOT RECOGNIZED AT SURFACE
Discorbis nomada ms. n sp.
Heterostegina texana
Heterostegina israelskyi
Marginulina idiomorpha
Marginulina mexicana var. vaginata
FRIO
(PROBABLY PART OF FAYETTE AT SURFACE)
Black shales
Mollusk fragments
VICKSBURG
EOCENE
JACKSON
WHITSETT
Uvigerina
Marginulina cocoaensis
Massilina pratti
MC ELROY
Textularia hockleyensis
CADDELL
Textularia dibollensis
Camerina moodybranchensis (C. Jacksonensis)
Lepidocyclina mortoni
Textularia hannai ms. n sp.
Nonionella cockfieldensis (above or below Text hannai)
Discorbis yeguaensis
Eponides guayabalensis var yeguaensis
CLAIBORNE
YEGUA
COCKFIELD
COOK MT.
CROCKETT
Ceratobulimina eximia
Discocyclina perpusilla
Lepidocyclina gardnerae
Operculinoides
SPARTA
SEMMAN
WECHES
QUEEN CITY
Lamarckina claibornensis, Textularia Smithvillensis
REKLAW
WILCOX
CARRIZO
SABINETOWN
ROCKDALE
SEGUIN
MIDWAY
WILLS POINT
KINCAID

BAROID WELL LOGGING SERVICE provides *direct* information regarding the presence of gas, oil or salt in the formation being penetrated right at the time of drilling and without interruption of operations. In addition to all equipment for making these determinations, complete core analysis apparatus is included in each Trailer. A drilling rate curve is also supplied. • **BAROID WELL LOGGING SERVICE** on hundreds of wells has proved extremely valuable in (1) minimizing coring, (2) correlating formations, (3) determining oil-gas, oil-water contacts, (4) locating points for casing and testing, (5) detecting washouts before pipe failure. • Trailers are leased with or without operating crews. In the latter case, Baroid service men train oil company engineers. Literature on request.

BAROID
Well Logging
SERVICE
FORMATION INFORMATION THROUGH MUD ANALYSIS

National Lead Company

BAROID SALES OFFICES: LOS ANGELES • TULSA • HOUSTON

Study of Plumbite Solutions Used in Petroleum Refining

(Continued from Page 56)

saved by using a reduced amount of stabilized solutions, which would contain the same amount of litharge as would be contained in solutions not so stabilized.

Fig. 7 illustrates the relationship between stabilized and unstabilized solutions in terms of pounds of litharge remaining soluble in 1,000 gal. of solution. From these illustrations it is readily seen that, over the working range of caustic soda strength, solutions containing from 34 to 210 per cent more litharge can readily be prepared by this method of stabilization.

Figs. 8 and 9 illustrate the effects of temperature on stabilized and unstabilized plumbite solutions.

The fact that all of the stabilized solutions have much lower crystallization temperatures than the unstabilized solutions works to the advantage of the refiner. These solutions do not crystallize until a point much lower than would normally be encountered, under usual working conditions, is reached. A sharp drop in temperature would produce conditions necessitating the use of extra heat and power to bring unstabilized solutions back to a workable condition. Another advantage of stabilizing is that there need be no uncertainty as to the exact titer of the doctor solution, since temperature depression does not result in loss of lead.

These supersaturated solutions can be regenerated after they have been exhausted. The preferred method is to heat the spent solution to about 212° F. and then to blow air through the hot solution to convert the lead sulfide into sodium plumbite by the caustic soda present. A temperature of 212° F. is indicated because stabilized solutions, apparently, are not obtained if regeneration is carried out at lower temperatures.

Conclusion

It has been shown that when litharge containing the proper quantity of stabilizing agent or agents, preferably antimony trioxide, is dissolved in sodium hydroxide, the plumbite solutions obtained have properties markedly different from the properties of the plumbite solutions prepared with litharge to which stabilizing agents have not been added. These differences are:

1. At normal working temperatures the stabilized solutions retain from 34 to 210 per cent more litharge than unstabilized solutions depending on the strength of the caustic soda solutions used in their preparation.

2. The stabilized solutions have much lower crystallization or freezing points than do the unstabilized solutions.

Because of these differences greater ranges of temperature, caustic soda strength, and concentration of lead than have heretofore been possible, are available to the petroleum refiner for his sweetening operation. It is felt that greater flexibility and perhaps other, unforeseen, advantages will derive therefrom.

Acknowledgment

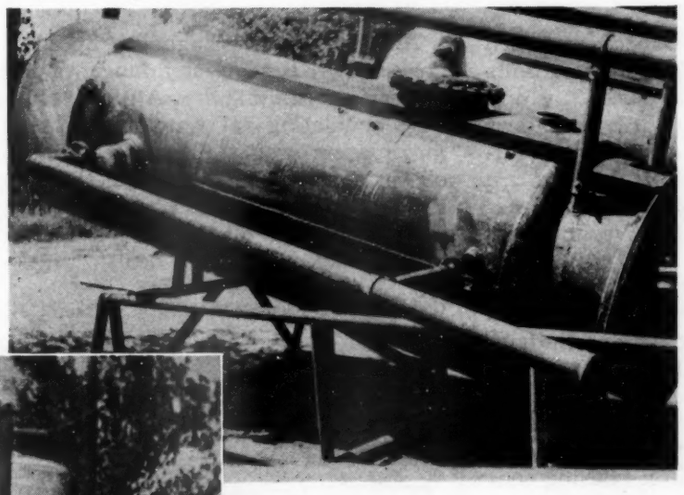
The authors are deeply indebted to Dr. C. W. Rippie, Solvay Sales Co. for reviewing the manuscript.

1. John Happel and D. W. Robertson, The Oil and Gas Journal, Mar. 31, 1939.

Portable Separators Used When Drilling-in Wells

IN Southeast New Mexico one large oil company has designed portable separators used primarily for drilling-in purposes, thereby doing away with the necessity of building costly concrete foundations at each location until such is wanted. The unit is easily moved by a 1½-ton winch truck and two men; it can be laid down or set up in 15 minutes. Two views of one of the units, one showing the separator in a position for moving and the other in an operating position, are shown in the accompanying photographs.

The separator is attached to the base by an unusual hinging arrangement consisting of a piece of 2½-in. pipe welded to the base with a piece of 2-in. slid inside and extending beyond each end of the 2½-in. pipe. The extending portions of the 2-in. are attached to the separator by small wings made of ½-in. steel plate. This hinge arrangement allows the separator to be laid almost horizontal when being moved, thereby reducing the overall height of the truck and load and doing away with any top heaviness. When reclined, the separator is supported by two fully braced cradles, one placed just below the center and the other near the top.



Portable separator used by one major oil company in Southeast New Mexico for use while drilling-in. At right is a view of the separator in position for moving, and below is a view of it in an operating position

The skid is built completely of used 2, 2½, 3 and 4-in. pipe which was unfit for better use. The long runners are made of 4-in. pipe with the cross-members of 3-in. Rails and rail supports are made of 2-in. The separator sits directly on a circular base made of ¼-in. steel plate and provision is made for bolting the separator to this base when in working position.

The 4-in. risers are attached to the bottom of the separator by braces made of 2 and 2½-in. pipe and 2-in. strap steel. The braces are bolted to the separator and to the risers so that they are easily removable.

Questions and Answers

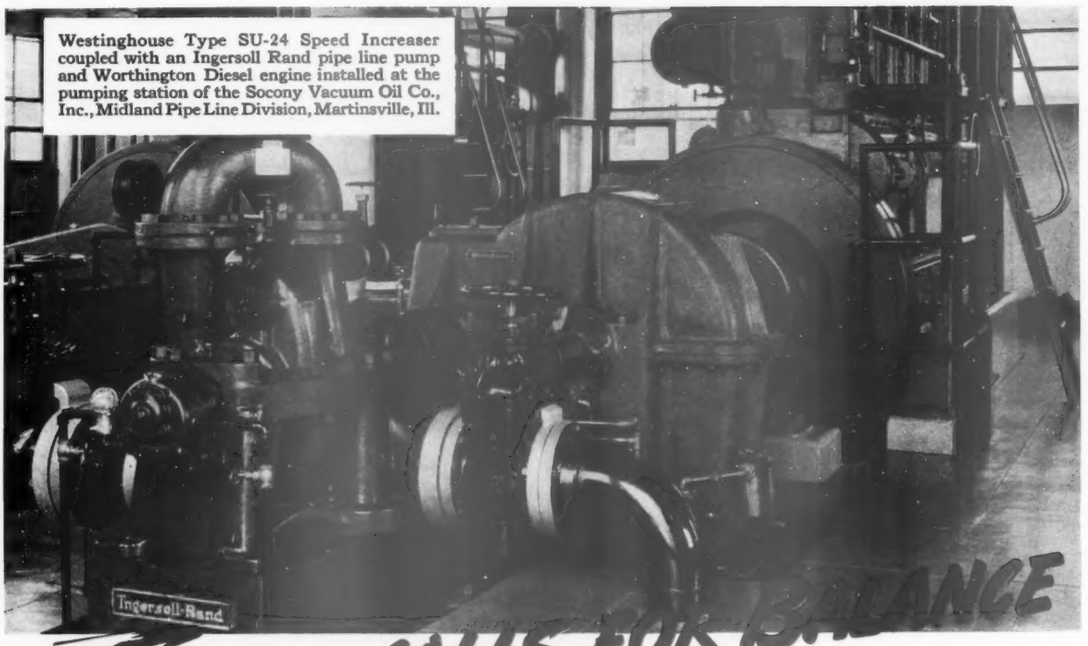
Power Requirements for Pumping 12 Wells

Will a 20-hp. engine provide sufficient power to properly pump 10 or a dozen wells that are 440 ft. deep? I have been told I should have a larger engine.—W. S. C., Peoria, Ill.

Unfortunately it is impossible to definitely answer your question without further information. I assume that your wells are pumped with a central power.

If your rod lines are fairly short, if the wells are pumped with less than 16 strokes per minute and the strokes are not more than 36 in. in length, then a 20-hp. engine, in fairly good condition, will furnish sufficient power for the job. This is assuming that the central-power system is in reasonably good balance and the rod lines are fairly short and friction losses not too high. However, if any of these conditions are more severe than stated above, if water encroachment should increase appreciably, or if the pump plungers are over 2¼-in. in diameter, it is quite likely a larger engine will be needed.

If you care to send further data, a more complete answer will be possible. This problem can also be solved by using the formulas, tables and charts which are included in the Producing Equipment Directory.



Westinghouse Type SU-24 Speed Increaser coupled with an Ingersoll Rand pipe line pump and Worthington Diesel engine installed at the pumping station of the Socony Vacuum Oil Co., Inc., Midland Pipe Line Division, Martinsville, Ill.

SPEED CALLS FOR BALANCE

6,000 RPM—that's the speed at which the pinion shaft in speed increasing units often turns. Vibration caused by improperly balanced gears spells trouble at any speed. That's why all gears in Westinghouse Type SU Speed Increasers are dynamically balanced on a special machine developed by the Westinghouse Research Laboratory.

Smooth, quiet operation is further assured by the accuracy with which gear teeth mesh—accuracy made possible by the hobbing process of gear cutting, the most accurate method ever developed.

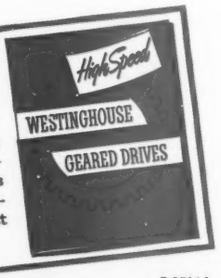
The entire gear assembly in Westinghouse Type SU Speed Increasers is enclosed in an extra heavy cast-iron housing that assures permanent alignment of rotating parts and dampens external vibration. Bearings are oversize and lined with a special high-grade long wearing babbitt to hold bearing maintenance at a minimum.

And with a Westinghouse Speed Increaser there is never any danger of gears or bearings running dry. A positive pressure circulating oil system keeps every moving part properly lubricated while an oil spray is directed at the mesh line of the gears. An oil strainer keeps the lubricant free from dust and grit while a special cooler dissipates heat.

Westinghouse Electric & Mfg. Co., Dept. 7-N,
East Pittsburgh, Pa.

WRITE FOR THIS FREE BOOK

Westinghouse has prepared a special 24-page book describing Type SU Speed Increaser Units. It contains detailed specifications and helpful application data for speed increasers used with electric motor and multi-cylinder engine drives. It's free. Just ask for booklet DD-3650.



J-07184

Westinghouse Geared Drives

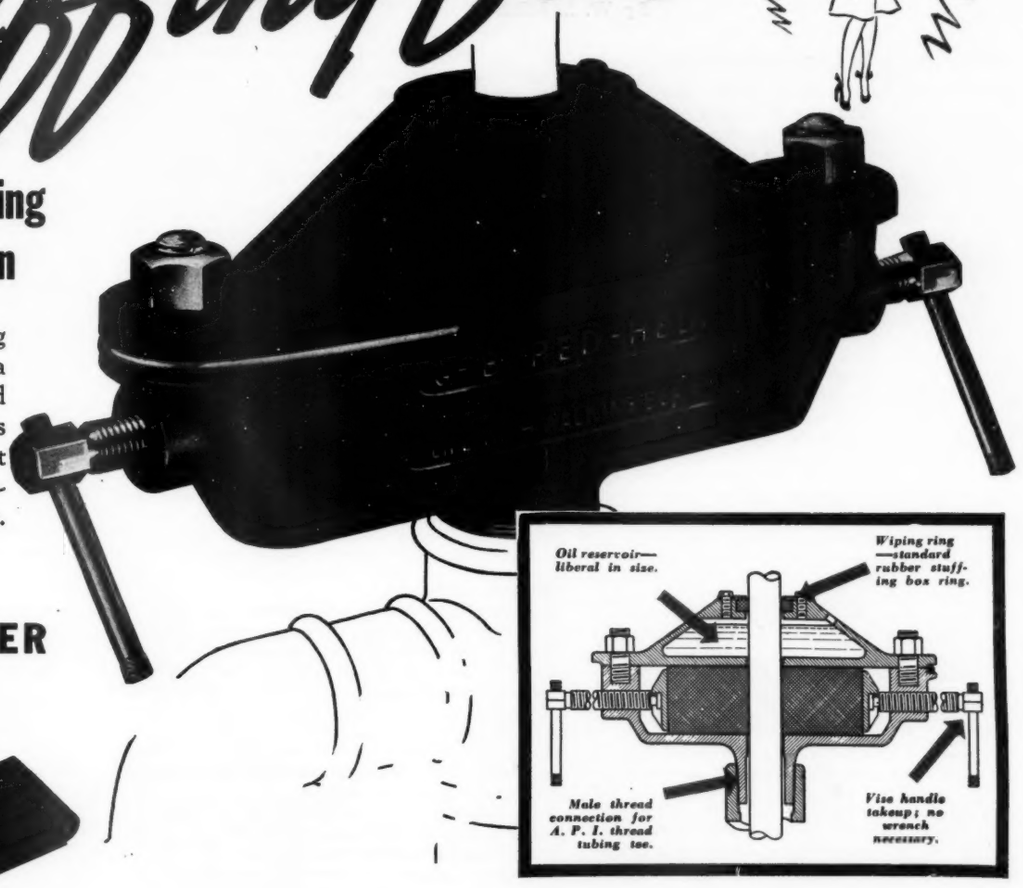
W WESTINGHOUSE ELECTRIC

G-B RED-HED

Stuffing Box

For Economical Packing —Less Rod Friction

The G-B RED-HED Stuffing Box for oil wells has a simple, sound design and practical field advantages approved by the equipment engineer..production superintendent and the pumper.


Oil reservoir—liberal in size.
Wiping ring—standard rubber stuffing box ring.
Male thread connection for A. P. I. thread tubing toe.
Vise handle takeup; no wrench necessary.

Patented MESHTITE RUBBER

—an entirely new packing element that packs off with less friction and less wear on the polished rod. It lasts *many times longer* than conventional block type rubbers of equal size, and maintains a tight fluid seal during all stages of wear. Only slight pressure to make the seal with a MESHTITE... can be tightened without a wrench.

The G-B RED-HED wins on every point

The MESHTITE Rubber is only one of the many features that combine for quick application, longer service with less maintenance time and cost.

(1) TOP ACCESS: When necessary to service, unscrew two nuts, lift the top and it is all before you in the daylight. (2) LIFT OUT ASSEMBLY: Rubbers and followers free so that both can be lifted out easily. (3) THE THIRD HAND: After raising the top, throw up the third hand and it keeps the top safely up out of the way, leaving two hands free to install the rubber. Installation of new rubber is simple —mesh together around the rod and drop into place. (4) LARGE LUBRICANT RESERVOIR: Plenty to run on until the fluid reaches the well head.

G-B RED-HED is available in two types—one, without wobbler with male thread; one,with new G-B RED-HED WOBBLER. Also RED-HED TWINSET—a compact double box assembly. All ferrous castings are copper bearing certified malleable iron for rugged strength and resistance to rust. Write for complete information.

Made by the makers of GUSTIN-BACON MFG. Co. Kansas City, Mo.

G-B MFG. CO.

Progress in METALS

By W. L. NELSON

Metallurgy in Stainless Steel

COMPLETE information on the iron chromium carbon alloys (steels) is not available in a concise form but the more simple pure iron chromium system behaves as shown in Fig. 1 which was taken in part from "Handbook on U.S.S. Stainless and Heat-Resisting Steels for the Petroleum Industry" which may be obtained from the Carnegie-Illinois Steel Corp., Pittsburgh, Pa.

This diagram is an equilibrium phase diagram showing the materials that are stable at various temperatures. Of particular significance, the materials shown at the lowest areas of the diagram are those that are obtained at room temperature by very slow cooling. Alloys of the composition enclosed in the loop marked 1 can be hardened by quenching but those outside of the loop or in the area marked 2 cannot be hardened.

The effect of carbon is to widen the extent of the loop so that at 0.25 per cent carbon the loop extends out to 23 per cent chromium and at 0.40 per cent carbon the loop extends out to 30 per cent chromium. In addition the A_2 transformation line drops down more rapidly if carbon is present so that at 18 per cent chromium and 1.5 per cent carbon, the A_2 line extends down to room temperature. Thus, most of the commercial chromium steels and irons (1-28 per cent Cr, 0.08-0.2 and 0.5 C) may be hardened by rapid cooling. Still another effect of chromium on steels is to lower the percentage of carbon in pearlite. The composition of the pearlite is somewhat as follows:

Chromium, per cent—	Carbon in pearlite (per cent)
12	0.3
8	0.4
4	0.55
0	0.85

The general effect of chromium is enhanced by the presence of other austenite forming elements such as manganese, nickel and nitrogen as well as carbon. The reverse effect with respect to the maximum chromium in hardenable alloys is obtained by adding ferrite stabilizing elements such as silicon, tungsten, molybdenum, titanium, columbium and aluminum.

Five per cent chromium steels.

As an illustration of hardenability, 4-6 per cent chromium weld will be hard and internally stressed at the base metal adjacent to the weld. This results because the base metal is heated to area 1 in the diagram but is rapidly cooled by the rest of the base metal. The weld itself is less liable to hardening because of the higher initial temperature and the slower rate of cooling. Hardening or cracks may be avoided by preheating to 500°-600° or softness may be restored by prompt heating for 1 hour to about 100° F. above the critical temperature. Thus, the air-hardening chromium alloys are usually heated to 1,550°-1,574° F. and cooled at a maximum rate of 50° F. per hour to black. The same may be accomplished by heating to just below the critical temperature (1,400°1,450° F.) for 2 hours per inch of thickness and cooling in the furnace to 1,100° F. The addition of small amounts of titanium or columbium (or aluminum) may be added to the air hardening (2-12 per cent chromium) steels for the purpose of minimizing the air-hardening effect. Thus, the addition of one of these elements may permit use of makeshift annealing on field work where complete annealing is impractical.

Other chromium steels.

The low-carbon steels containing 12 or more per cent chromium are scarcely hardened by air cooling or quenching and hence the welding precautions mentioned above are less necessary and in fact are unnecessary at chromium contents exceeding 17 per cent. However, excessive grain growth occurs with some attendant embrittlement. Nevertheless such alloys are widely used. At temperatures of 800°-1,500° F., the chromium steels even with 8 per cent nickel, tend to precipitate carbides at the grain boundaries. At one time this was a serious problem because of breakage, loss of corrosion resistance, or general hazard, but carbide precipitation has been avoided in the newer steels (1933 on) by the use of low percentages of carbon (0.1 max.) and some stabilizing element such as titanium (four times carbon percentage) or columbium (10 times carbon). Loss of corrosion resistance by carbide precipitation at welds may be avoided by heating to 1,950° F. and quenching, or by the use of columbium or titanium in the weld metal.

If hardenability is desired or may be permitted in the high-chromium steels, as in valve seats or castings, it may be attained by the use of more carbon. A 16 per cent chromium, 1 per cent carbon steel can be heat-treated to a hardness exceeding 500 Brinell.

The use of molybdenum (0.5 per cent) imparts stability to the structure of the chromium steels so that embrittlement is avoided. It also greatly increases the creep strength at elevated temperatures. In higher percentages (3-5 per cent) molybdenum increases the resistance of the stainless steels to corrosive agents such as organic acids and reducing compounds.

Austenitic alloys.

The austenitic chromium steels which are those obtained by quenching from the area marked 1 or by the use of slow-cooled steels containing 18 or more per cent chromium have several remarkable characteristics. They are not hardened by heat treatment or welding, they are extremely ductile and tough, and they are more magnetic. By cold working, strengths of 200,000 lb. per sq. in. may be developed. Of particular significance, they are highly resistant to atmospheric oxidation or tarnishing at room temperature, and the corrosion resistance of welds is substantially equal to that of the base metal. The only difficulty with them is carbide precipitation at elevated temperatures and this, as mentioned above, may be avoided by using low percentages of carbon or by the use of stabilizing elements.

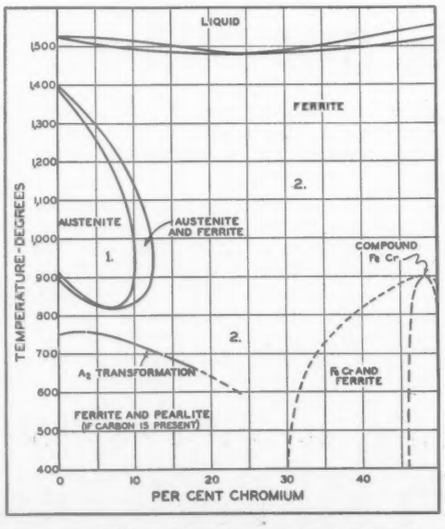


Fig. 1—Equilibrium phase diagram for iron-chromium alloys

Machinability Ratings of Metals

An abstract taken from Metals & Alloys, p. 80, July 1940, of "Metal-Cutting Power Calculations." "Metal-Cutting Power Calculations," P. H. Miller, Machinist, Vol. 84, Mar. 2, 1940, pp. 23-25; abstracted in Nickel Bulletin, Vol. 13, Apr. 1940, pp. 69-70. Investigation.

FORMULAS for power requirements for machining a variety of metals are presented. The relationship (if any) between the physical properties of the metal and the power required, and the relation of chip thickness and width to power requirements were determined. A range of representative plain and alloy steels, several grades of plain and alloy cast iron, and a few nonferrous metals and alloys were studied. The basic formula used is:

$$\text{Input hp.} = A + B$$
$$B = \text{hp. at each tool} = D \times F \times S \times C$$

A = friction hp. lost in machine (25-30 per cent of B for new machines and 35-40 per cent of B for old). The constants are D = depth of cut, in.; F = feed, in.; S = cutting speed, ft./min.; C = power constants as listed in Table 1, evidently based on correlation of data from many jobs.

In the article, each type of steel is subdivided according to different Brinell hardnesses available through carbon content and heat-treatment modification, and "power constants" are given for each hardness range of each steel, based on the idea that for a given steel, the power required is approximately proportional to the Brinell hardness. [This digest gives only the "average job" constant and the steel hardness evidently characteristic of this average job. In view of the absence of (1) data on tool materials, and (2) information on the operation—milling, turning, drilling, etc., publication of specific constants for narrow hardness ranges seems a meaningless refinement., F.P.P.] For steels over 400 Brinell, the author recommends doubling the value of "C" given in the table.

Study of the relation between chip proportions and power showed that for chips more than 0.015 in. thick, power is almost directly proportional to chip width and thickness. For chip thickness below 0.015 in., the ratio of power to thickness is somewhat greater, but it was only with very thin chips that deviation from direct proportionality was found to be appreciable.

Typical check tests illustrate the agreement between horsepower values calculated by the above formula and those obtained in actual machining tests by the General Electric Co.

TABLE 1—POWER CONSTANTS FOR MACHINING VARIOUS METALS AND ALLOYS

Material—	Power Constant "C" for "average job"	Corresponding Brinell hardness
Steel—S.A.E. 1010-1025	6.0	125-150
Steel—S.A.E. 1030-1055	8.0	175-200
Steel—S.A.E. 1060-1095	9.0	200-250
Steel—S.A.E. 1112-1120	6.0	150-175
Steel—S.A.E. X1314-X1340	5.0	150-175
Steel—S.A.E. T1330-T1350	9.0	200-250
Steel—S.A.E. 2015-2115	7.0	125-150
Steel—S.A.E. 2315-2335	7.5	200-250
Steel—S.A.E. 2340-2350	9.0	275-325
Steel—S.A.E. 2512-2515	8.0	200-250
Steel—S.A.E. 3115-3130	8.0	200-225
Steel—S.A.E. 3140-3450	9.0	250-300
Steel—S.A.E. 4130-4345	9.0	275-325
Steel—S.A.E. 4615-4820	9.0	275-325
Steel—S.A.E. 5120-5150	10.0	275-325
Steel—S.A.E. 52100	10.0	250-300
Steel—S.A.E. 6115-6140	9.0	225-275
Steel—S.A.E. 6145-6195	12.0	250-300
Plain cast iron	4.0	175-200
Alloy cast iron	4.0	150-175
Malleable iron	4.0	125-150
Cast steel	9.0	200-225
Brass—Hard	10.0	.....
Brass—Medium	6.0	.....
Brass—Soft	4.0	.....
Brass—Lead screw stock	4.0	.....
Bronze—Hard	10.0	.....
Bronze—Medium	6.0	.....
Bronze—Soft	4.0	.....
Aluminum—Cast	3.0	.....
Aluminum—Hard (rolled)	4.0	.....
Monel (rolled)	12.0	.....
Zinc alloy die castings	3.0	.....

Metallurgical Terms

Definitions of Welding Terms

The American Welding Society presents 10 pages on this general subject in the April 1940 issue of the Welding Journal, Pages 270-279. Included are a master chart of welding processes (½ page), tentative definitions of welding terms, and 4 pages of sketches and diagrams. The definitions are somewhat formal and might be made more useful in some instances by the addition of explanatory notes.

Pipe-Line Activity

Natural Gas Pipeline Will Continue Construction of Milwaukee Project

WASHINGTON, D. C.—The month-old Federal Power Commission hearing called to consider two applications to serve natural gas to Wisconsin was concluded last week after the Natural Gas Pipeline Co. of America served notice it would extend to completion its partly constructed pipe line to Milwaukee.

Floyd C. Brown, vice president and general manager of Natural Gas, testified that the company would continue to build its extension to the Wisconsin area regardless of what happened, implying that the work would go on even if the commission took favorable action on the applications of the Western Natural Gas Co. or Independent Natural Gas Co.

Mr. Brown delved into plans for building the pipe line and described construction of the extension from the Chicago area, already served by Natural Gas Pipeline, to Milwaukee. Discussing the available source of supply for the additional gas required, he assured Examiner E. G. Simpson that Natural Gas reserves were sufficient to take care of the increased demand. He introduced exhibits on the extent of the reserves, particularly in the Panhandle and Hugoton fields. He said the Hugoton reserves would offset any possible depletion which might occur in the Texas Panhandle.

After being conducted in Madison, Wis., for 3 weeks, the hearing was transferred to Washington to consider evidence introduced by the Natural Gas Pipeline Co. of America opposing the Western and Independent applications.

Protection of Pipe Lines Against Attack Is Planned

WASHINGTON, D. C.—Edward R. Stettinius, Jr., of National Defense Commission, announced that the American Petroleum Institute had created several committees to work out with military authorities a plan of protecting oil-supply lines and storage facilities against possible attack or sabotage.

Surveys will be conducted in five regions designated as Northeastern, Southeastern, Great Lakes, Central and Western. The work will be centralized by a policy and coordination committee comprising:

W. S. Farish, president of Standard Oil Co. (New Jersey); H. D. Collier, president, Standard Oil Co. of California; Henry M. Dawes, president, Pure Oil Co.; J. Frank Drake, president, Gulf Refining Co.; George A. Hill, president, Houston Oil Co.; J. C. Hunter, president of Mid-Continent Oil and Gas Association; J. Howard Pew, president, Sun Oil Co.; W. S. S. Rodgers, president of Texas Corp., and W. G. Skelly, president of Skelly Oil Co.

Mississippi Fuel Pipe-Line Hearing Continued Until December 9

WASHINGTON, D. C.—Examiner Marion Farrington agreed last week to continue until December 9 a Federal Power Commission inquiry into the operations of a syndicate controlling the Mississippi River Fuel Corp. The delay, sought by counsel for producing companies supplying Mississippi Fuel, a pipe-line concern, with natural gas for the St. Louis area, was granted after the examiner earlier had denied such a request.

Counsel for the producers asserted that they were served with subpenas requiring a vast supply of documents and other information that would require weeks to assemble.

Commission Attorney Russell Gorman said he was agreeable to the continuance provided attorneys for the producers supplied needed documents in advance of the hearing. Mr. Farrington said it had become obvious commission counsel were not ready to proceed and that he felt it was "unfortunate" the case was allowed to come to trial before "it could be carried through."

Christy Payne of Sarasota, Fla., retired organizer and first president of the Mississippi River Fuel Corp., was on the stand again Saturday, supplementing testimony about the formation of this concern by a syndicate to buy gas from the producers involved, all in turn controlled by members of the syndicate. The syndicate, he said, embraced Standard Oil Co. (New Jersey), of which he formerly was vice president; Columbian Carbon Co., United Gas Corp. and United Carbon Co.

The commission is inquiring into the purposes of the syndicate and any possible effect common ownership of producing and pipe-line companies may have on the gas-rate structure.

Socony-Vacuum Starts Deliveries Through Buffalo-Syracuse Line

Socony-Vacuum Oil Co., Inc., has placed in operation the gasoline pipe line to make deliveries of refined products from its refinery at Buffalo, N. Y., to Rochester, Syracuse and other points in western New York. A shipment of fuel oil was the first shipment to be sent through the line. The main line consists of 180 miles of 6-in. pipe. Construction work was handled by O. C. Whitaker Co.

O. C. Whitaker Co. Has Pipe Line Work in Missouri and Texas

Before the completion of the 180-mile gasoline pipe line for Socony-Vacuum Oil Co., Inc., in western New York, the contractor, O. C. Whitaker Co., had undertaken work in Missouri and Texas. This firm will complete by the middle of December the construction of 135 miles of 12-in. in Missouri. This job is part of the 180-mile project of Stanolind Pipe Line Co., most of which is part of a system connecting the La Plata station on the main line with the Standard Oil Co. of Indiana refinery at Wood River, Ill.

In addition to laying pipe for the new line, the work includes a 15-mile loop near Marceline, Mo. The balance of the construction on the new line is handled by Jones & Brooks, operating as Texokan Co.

For United Gas Pipe Line Co., O. C. Whitaker Co. is laying four loops of 4, 6, 8 and 10-in. pipe which represent a total of 30 miles. This is being laid near Seabreeze in the vicinity of Beaumont, Tex. The contractor is also working on a contract for reconditioning 35 miles of 6, 8, and 12-in. crude-oil line near Taft, Santon, and Three Rivers in the Corpus Christi area of the Texas Gulf Coast.

Estimates of Cost for Two Pipe Lines to Milwaukee

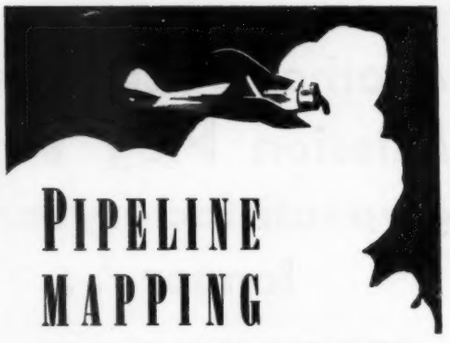
In the course of the hearing conducted by Federal Power Commission to consider applications for permits to construct natural-gas pipe lines from the Panhandle and Hugoton areas to Milwaukee, estimates of the cost of construction were presented by Western Natural Gas Co. and Independent Natural Gas Co.

Western's estimate of construction follows:

Main line	$17,124,304
Laterals	1,638,850
River crossings	2,000,000
Compressor stations and dehydrating plant	2,545,000
City gate equipment	250,000
Gathering lines	1,500,000
General expense	150,000
Total construction	$25,208,154
Working capital	1,000,000
Total cost	$26,208,154

The Independent estimate of cost, as of the first year, was as follows:

Land	$ 118,750
Rights-of-way	1,578,382
Measuring and regulating structures	96,000
Other transmission structures	34,000
Measuring and regulating equipment	126,000
Transmission main line	14,384,120
Stream crossings	2,232,500
Lateral lines	5,202,000
Compressor stations	1,145,000
Telephone line	996,000
High-pressure gas supply	1,312,490
Ray treating and dehydrating plant	254,725
General property	300,000
Omissions and contingencies	555,599
Total direct construction cost	$28,335,566
Undistributed general costs	3,116,912
Total plant account	$31,116,912
Materials and supplies	100,000
Cash working capital	400,000
Total investment	$31,952,478



PIPELINE MAPPING
AT MAXIMUM SPEED

An organization of more than three hundred employees; operating eight photographic airplanes—and prepared to supply accurate and dependable photographic mapping at maximum speed and minimum cost.

PHOTOGRAPHIC MAPS—accurate picture of the land, in scale, along the entire length of the contemplated route.

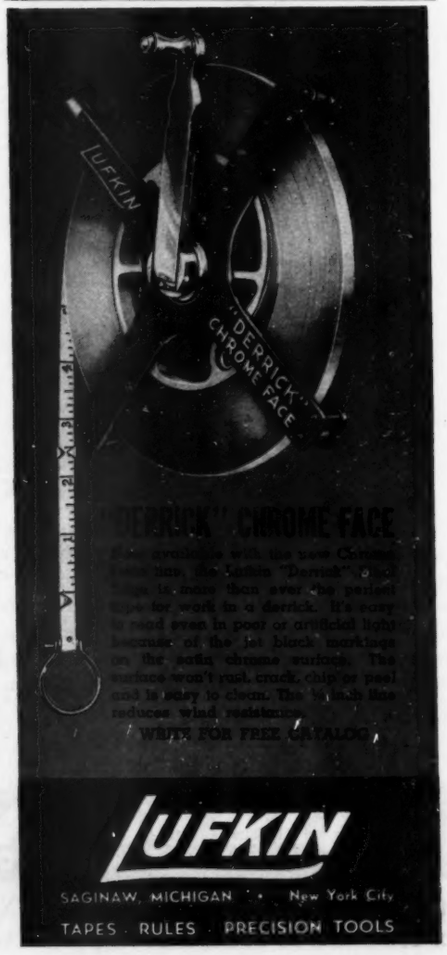
CONTACT PRINTS — overlapping exposures, permitting stereoscopic examination for contour and elevation data.

OWNERSHIP MAPS—traced from and controlled by the photographic map and containing all ownership and occupancy data for right-of-way purchase, as compiled by a highly trained corps of experienced abstractors and engineers.

EDGAR TOBIN
AERIAL SURVEYS

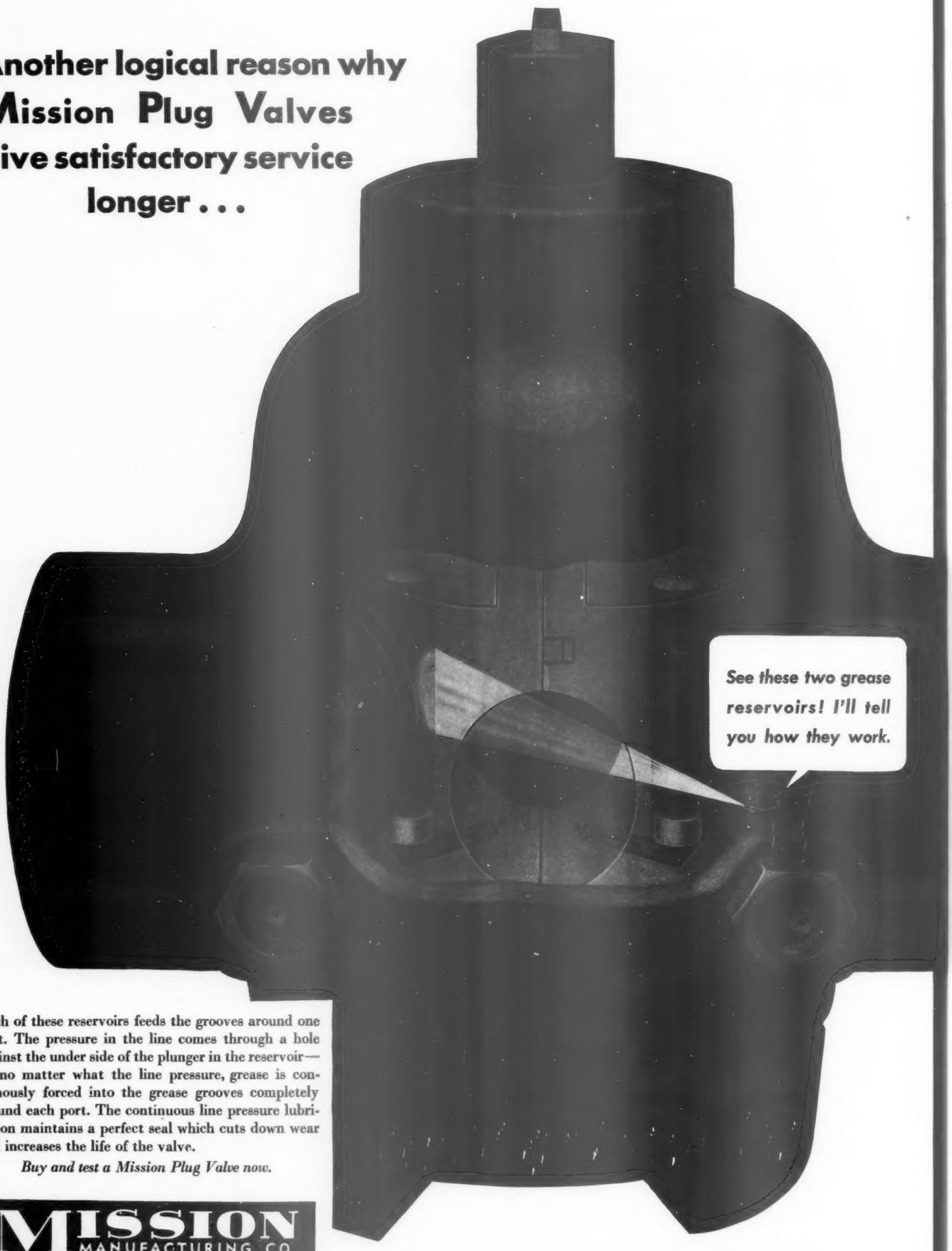
502 West Mistletoe — San Antonio Texas

HOUSTON OFFICE: COMMERCE BLDG.



LUFKIN
SAGINAW, MICHIGAN · New York City
TAPES · RULES · PRECISION TOOLS

Another logical reason why Mission Plug Valves give satisfactory service longer . . .



Each of these reservoirs feeds the grooves around one port. The pressure in the line comes through a hole against the under side of the plunger in the reservoir—so, no matter what the line pressure, grease is continuously forced into the grease grooves completely around each port. The continuous line pressure lubrication maintains a perfect seal which cuts down wear and increases the life of the valve.

Buy and test a Mission Plug Valve now.

MISSION
MANUFACTURING CO.

HUMBLE ROAD • HOUSTON, TEXAS
EXPORT OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

KANSAS: A lease play is developing in Graham, Phillips and Norton counties following discoveries in the two counties first named.

OKLAHOMA: A new gas field was opened up in the Viola lime in southern Caddo County, where steep dips indicate relatively small fields. Extensions to the Dill pool are still being recorded.

LOUISIANA-ARKANSAS: A 25,000,000-cu. ft. gasser running wild opens a new area in western Caddo Parish, a few miles east of Waskom. The pay is believed to be the Ozan.

CALIFORNIA: A good gas well extends the Delano field 1 mile north. Rio Bravo is extended by a well which appears to be an edge well. Inglewood development continues active in spite of the poor showing of the deep discovery.

MICHIGAN: An Osceola County gas discovery shares the spotlight with the deep test in Bay County which is several hundred feet below the previous record holder for the state. Gas is threatening to blow out the mud at 7,380 ft.

WEST TEXAS: The regaging and opening of a 10-month shut-in extension to the Apco field is expected to inaugurate a drilling program for this Ellenburger lime field in Pecos County.

NORTH TEXAS: The Ross and Hapgood fields in Clay County were given deeper producing levels as well as slight extensions during the week.

WEST CENTRAL TEXAS: Two closely watched tests, one each in Callahan and Jones counties, were recorded as failures during the past week. A new deep wildcat is preparing to start in Throckmorton County.

EASTERN TEXAS: New wildcat tests are announced for Wood, Rains, Navarro, Hill and Leon counties in the eastern Texas district.

LOUISIANA GULF COAST: Deep test on north flank of the Section 28 salt dome, St. Martin Parish, opens first production.

TEXAS GULF COAST: Crude production opened from new sand on the north side of Ogburn field, Harris County.

SOUTHWEST TEXAS: Discovery of first commercial production in Willacy County places Rio Grande Valley district in limelight. Wildcat on Mud Island prospect in Aransas Bay prepares to test after logging additional showings.

FOREST CITY BASIN: The twenty-fifth producer in the Falls City pool is completed this week.

ILLINOIS: Best wildcat completion for the week is a McClosky well in Jasper County which is either a new pool or a 1-mile extension to the West Liberty pool. Perry County's prospects sink as three wildcats are abandoned. Production is maintained by recompletions in Salem, steady restricted production of Salem and the rapid drilling of flush areas in White, Wayne and Hamilton counties.

COMPLETIONS IN ALL FIELDS . . .

(Week Ended November 23, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	64	18	11	93	5,375	3,250
Ohio	6	11	3	20	1,089	783
Indiana	5	2	5	12	443	311
Kentucky	5	2	2	9	453	643
Illinois	41	1	20	62	3,450	3,294
Michigan	6	2	6	14	1,066	1,329
Kansas	28	2	8	38	1,624	1,220
Oklahoma	13	6	7	26	1,637	1,582
Texas:						
North Central Texas	26	1	11	38	2,603	2,191
West Texas	31	0	1	32	1,632	1,652
Texas Panhandle	6	1	0	7	522	390
Eastern Texas	11	0	3	14	572	635
Gulf Coast Texas	15	1	6	22	1,124	1,216
Southwest Texas	23	2	12	37	1,893	2,183
Total Texas	112	5	33	150	8,346	8,268
North Louisiana	12	5	5	22	596	483
Louisiana Gulf Coast	14	0	7	21	923	653
Total Louisiana	26	5	12	43	1,519	1,138
Arkansas	5	0	2	7	166	228
Montana	2	0	1	3	213	156
Wyoming	5	0	1	6	150	125
Colorado	0	0	1	1	16	20
New Mexico	3	0	1	4	488	528
California	9	1	3	13	920	833
Miscellaneous	5	0	0	5	216	58
Total United States	335	55	116	506	28,271	23,924
Total previous week	380	56	145	581		
Week ended Nov. 25, 1939	406	51	132	589		

SUMMARY OF OUTSTANDING FIELDS . . .

(Week Ended November 23, 1940)

	Active operations	Oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS:					
K.M.A.	54	4	2,565	1,515	34,284
Wasson	39	6	4,390	996	32,869
Ector County	48	5	4,785	2,344	49,895
Hull-Silk	53	4	3,495	385	10,288
East Texas	21	7	294	25,936	447,000
OKLAHOMA:					
Cumberland	9	1	707	10	2,700
Hewitt	23	1	150	782	5,750
KANSAS:					
Borndoldt	9	0	0	136	2,496
Silica	7	2	2,852	717	17,352
Stoltenberg-Wilkins	18	4	3,997	165	4,450
Trapp	6	1	357	591	15,690
ARK-LA-TEX:					
Cotton Valley	2	0	0	160	13,250
Olla	11	3	495	70	7,000
MICHIGAN:					
Adams	10	0	0	22	1,874
ILLINOIS:					
Salem	4	1	49	2,950	126,115
Louden	26	7	1,112	1,107	70,250
Centralia	3	0	0	717	16,300
Other basin fields	293	32	3,948	2,737	110,735
Old fields	....	....	.....	.....	11,178
NEW MEXICO:					
Lea County	47	3	3,378	2,591	85,370
Eddy County	48	0	0	635	17,380
MISSISSIPPI:					
Tinsley	7	4	2,237	99	14,440

Gas Blowout Near Greenwood Opens Pool in Caddo Parish

By
GEORGE WEBER

SHREVEPORT, La., Nov. 25.—A gas blowout near the town of Greenwood, western Caddo Parish, highlighted activity in the Ark-La-Tex area, marking a new gas-field discovery. The wildcat, Delta Drilling Co. 1 Dunn, was drilling within 57 ft. of contract depth when it encountered a sand at 2,543 ft. Operators came out of the hole to core and on going back in with a core barrel and circulating, the well blew out.

At the week's end a crew of wild-well fighters had the well nearly under control. The gas flow, estimated at 25,000,000 cu. ft. daily, is coming from what is believed to be the Ozan sand. Total depth of the test is 2,551 ft. The possibility of oil production down structure from the wild well is apparently discounted by the fact that the well has begun to make some water. No further development of the new area is announced at this time, but it is expected that the operators will drill another well after 1 Dunn is killed. An outlet for the gas seems assured, since two trunk lines pass near the field.

Lower Wilcox Play

Another failure in the Wilcox in Winn Parish resulted in the abandonment of Atlantic 1-D Goodpine, drilled south of Winnfield in 17-10-2w, and about 22 miles west of the Olla field. In Catahoula Parish Sinclair Prairie 1 Peck, in irregular section 39-10-8e, about 33 miles east of Olla, was also abandoned, after drilling to 6,023 ft., through the Wilcox formation and into the Midway.

A wildcat test is beginning in Caldwell Parish, 9 miles northeast of the Olla field. The wildcat, Gholson & Hodge 1 Louisiana Central, is located near the town of Kelly. Among the new locations for the week was Hunter 1 Pipes, a La Salle Parish wildcat 5 miles west of the town of Jena and about 5½ miles northwest of the Nebo field. Other active wildcat tests into the Wilcox are drilling in Grant, Franklin, and La Salle parishes.

Olla continued to lead the area in important new development. Three new wells were completed in the field during the past week, and one, a west-edge extension, was completed in the Nebo field to the south.

Claiborne Parish Active

Interest is revived in Lisbon with resumption of coring in the deep test, Caruthers trustee 1 Simmons unit. The test has been shut down with a fishing job for several weeks, after a threatened blowout in the Cotton Valley formation. It will be carried to contract depth before an electrical survey is run. This test, having encountered several likely producing horizons, will be watched with considered interest as it continues to penetrate the Cotton Valley formation.

North of Lisbon, Union Producing Co. 1-A Meadows is drilling below 9,650 ft. in shale and lime, without shows. The test is located on top of the structure, but has failed to show the productive possibilities for oil or gas that either Lisbon Exploration 1 Vaughn or the current Caruthers test encountered. Both wells are located south and down structure from the Union wildcat.

NORTH LOUISIANA COMPLETIONS

Wildcat—Bossier Parish

Ed D'Armand 1 Elgin ..... NW SW SE 8-20-13
T.D. 3,002 ft., dry.

Wildcat—Caddo Parish

Caddo-Monarch Gas 1 Crystal fee, NE SW SW 23-21-16
T.D. 1,576 ft., show of oil, dry.

Caddo—Caddo Parish

E. E. Johnson 1 Feist ..... NW NE SW 32-21-15
60 bbl., pumping, T.D. 1,550 ft., 4,000 gal. acid, 5½-in. casing 1,367 ft.
Juan & McFatrick 4 Hobbs .... SW NE NW 28-21-15
Pumping 25 bbl., T.D. 1,548 ft., 7-in. casing 1,391 ft.
Magnolia 29 Doan-Thigpen ..... N½ N½ NE 6-20-15
Pumping 15 bbl. oil, 5 bbl. salt water, T.D. 1,505 ft., 7-in. casing 1,352 ft., 4,000 gal. acid.
Magnolia 30 Doan-Thigpen ..... NE NW NE 6-20-15
Pumping 30 bbl. oil, 5 bbl. salt water, T.D. 1,507 ft., 6⅝-in. casing 1,347 ft., 4,000 gal. acid.
Mahan & Griffin 1 Daniels ..... SE NW SW 34-22-16
Pumping 25 bbl., old T.D. 2,473 ft., P.B. 2,455 ft., 6-in. casing 2,465 ft.
Midfield Oil Co. 1-C Muslow ..... NE NE NW 5-20-15
Pumping 25 bbl., T.D. 1,534 ft., 4½-in. casing 1,380 ft., 4,000 gal. acid.
S. Reele 1 Hardey ..... NW SE NE 32-21-15
Pumping 35 bbl., T.D. 1,588 ft., 6⅝-in. casing 1,383 ft., 4,000 gal. acid.

Wildcat—Catahoula Parish

Sinclair Prairie 1 Peck, 1,200 ft. N, 250 ft. E. S cor., irregular sec. 39-10-8e, T.D. 6,023 ft., dry, top Wilcox 3,107 ft., top Midway 5,880 ft.

Bull Bayou—De Soto Parish

W. K. Williams 2 Scott ..... NW NE NE 19-21-11
2,000,000 cu. ft. gas, T.D. 896 ft., Nacatoch sand 824-28 ft., 4-in. casing 794 ft.

Nebo—La Salle Parish

H. L. Hunt 4-A Goodpine ..... NE SW 9-7n-3e
360 bbl., 18 per cent salt water, ⅜-in. choke, T.P. 125 lb., C.P. 325 lb., top Wilcox 2,520 ft., T.D. 3,883 ft., 7-in. casing 3,881 ft., P.B. 3,863 ft., perf. 3,791-96 ft.

Olla—La Salle Parish

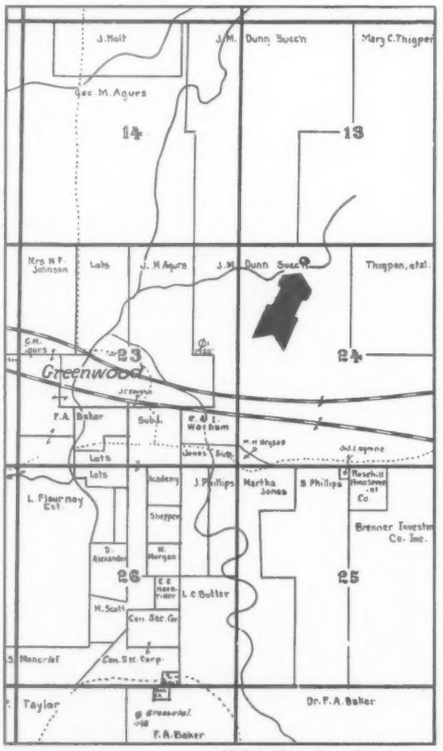
Placid 55 La. Central ..... SW NE 35-10-2e
145 bbl., 6 per cent salt water input gas, T.D. 2,423 ft., 7-in. casing 2,422 ft., perf. 2,288-94 ft., Cruse sand.
Placid 62 La. Central ..... SE NE 2-9-2
150 bbl., 6 per cent salt water, flow valves, T.D. 2,450 ft., 7-in. casing 2,450 ft., perf. 2,260-68 ft.
Placid 63 La. Central ..... NE SW 2-9-2
200 bbl., 25 per cent salt water, 14/64-in. choke, T.P. 75 lb., C.P. 100 lb., 7-in. casing 2,459 ft., perf. 2,272-76 ft., Mathews sand.

Monroe—Ouachita Parish

Carbons Consolidated 1 White ..... SE SE 34-19-3e
5,500,000 cu. ft. gas, R.P. 880 lb., T.D. 2,213 ft., 6-in. casing 2,158 ft.
Interstate Nat. Gas Co. 102 fee, NW NW NW 45-19-3e
4,000,000 cu. ft. gas, R.P. 840 lb., T.D. 2,160 ft., 6-in. casing 2,103 ft.
Interstate Nat. Gas Co. 103 fee, SW NW NW 45-19-3e
3,000,000 cu. ft., R.P. 812 lb., T.D. 2,158 ft., 6-in. casing 2,108 ft.

Crichton—Red River Parish

J. A. Whitson 1 Christopher ..... SE SW 16-13-10
T.D. 100 ft., abandoned.



Globe Map Co., Shreveport

A new gas field near the town of Greenwood, western Caddo Parish, has been discovered by the blowout at Delta Drilling Co. 1 Dunn, indicated by the arrow. The test was being shut in late last week and development of the new area is expected shortly

Converse—Sabine Parish

Jenkins & Meyers 1 Mott Est. ..... SW SW 17-9-13
Pumping 60 bbl., T.D. 1,962 ft., 7-in. casing 1,503 ft.

Monroe—Union Parish

Nemours Corp. 1 Hale ..... SW NW 14-21-3e
2,000,000 cu. ft. gas, R.P. 945 lb., T.D. 2,200 ft., 6⅝-in. casing 2,128 ft.

Wildcat—Winn Parish

Atlantic Ref. Co. 1-D Goodpine ..... SW NE 17-10-2w
T.D. 3,500 ft., dry.

NORTH LOUISIANA DRILLING REPORT

Bossier Parish

Roy L. Reese et al 1 Bellevue Land ..... SW SW NE 27-20-11
T.D. 3,035 ft., S.D., old well drilled deeper.

Caddo Parish

Delta Drlg. Co. 1 Dunn ..... NW NE NW 24-17-16
Blew out, est. 25,000,000 cu. ft. gas, some water, top sand 2,543 ft., T.D. 2,551 ft., killing.
W. G. Ray Drlg. Co. 1 Noel Est. ..... C SE 30-21-14
(Deep Pine Island), rigging up.

Caldwell Parish

Gholson & Hodge 1 La. Central .... NW NE 35-12-3e
Derrick.

Claiborne Parish

J. D. Caruthers, Tr. 1 Simmons unit .. N½ SW 2-20-5w
(Deep Lisbon), cleaned out, coring 3,690 ft.
V. A. Hardin et al 1 Valentine ..... NW NW 31-20-6w
Set 5½-in. casing, 6,430 ft., S.D. 6,507 ft.
Union 1-A Meadows et al ..... C NE 18-21-4
Drilling, 9,655 ft. shale and lime.

De Soto Parish

J. E. Stack et al 1 Cook ..... NW NE 32-13-14
S.D. 660 ft.

Franklin Parish

H. L. Hunt 3 Chicago Mill & Lbr. Co., SW SE 35-14-9e
Drilling shale 4,579 ft.

Grant Parish

Gholson & Hodge 1 Eberlee ..... NE NE 16-7-1e
Drilling 50 ft.
Fred Stovall 1 Maxwell ..... NW NE SW 9-9-1e
Arranging to deepen 1,537 ft.

La Salle Parish

Delta Drlg. Co. 1 Hughes ..... NE NE SW 22-8-1e
Drilling shale and sand 2,500 ft.

Natchitoches Parish

J. E. Watts 1 Tanner ..... SW SW NW 18-10-10
T.D. 3,240 ft., set 5½-in. casing, 3,220 ft. sand.

Red River Parish

Thornton & La Croix 1 Prudential Life Ins. Co. ..... SW SW NW 31-11-9
Running 5-in. casing 1,317 ft.

Webster Parish

H. L. Hunt 1 Pardee ..... SW SE 36-22-10
Drilling 5,907 ft.

NORTH LOUISIANA FIRST REPORTS

Caddo—Caddo Parish

Juan & McFatrick 5 Hobbs ..... SE NW NW 28-21-15
G. McClenaghan 1 McClendon ..... SE NW SW 18-21-15
McDonald & Campbell 17 Youree ..NE SW NE 13-20-15
Oils & Gas, Inc. 4 Stiles ..... NE NE 28-21-16
Texas Co. 1 Heilperin ..... NW SE NW 28-21-15

Sugar Creek—Claiborne Parish

Haynes B. Owenby Drlg. 1-C Ozley, NW NE SE 7-19-5w

Nebo—La Salle Parish

H. L. Hunt 6-A Goodpine ..... SE SW 9-7n-3e

Wildcat—La Salle Parish

Hunter Co. 1 Pipes ..... SW SE 18-8n-3e

Wildcat—Natchitoches Parish

Research Drlg. Co. 1 Walker ..... NE NE 9-10-10
Old well drilled deeper.

Wildcat—Sabine Parish

J. E. Watts 1 Cook Land Co. .... W½ SW NE 27-10-11

ARKANSAS FIRST REPORTS

Wildcat—Clark County

Coker & Grieves 1 E. S. Sullivan ..SW NE NE 2-11-20
W. S. King 1 McKenzie ..... SE SE NW 30-10-19

Wildcat—Union County

John N. Watkins 1 S. Nathan .. NE NE SW 18-19-12w

ARKANSAS COMPLETIONS

Buckner—Columbia County

G. S. Hammond 2 S. T. Crone ..... NE SW 9-16-22
337 bbl., 12/64-in. choke, T.P. 180 lb., C.P. 80 lb., 3,500 gal. acid, T.D. 7,315 ft. 5½-in. casing 7,301 ft., porous Smackover lime 7,305 ft.

Magnolia—Columbia County

Louark Prod. Co. 1 Mary Booth et al unit ..... N½ N½ 30-17-19
408 bbl., 9/64-in. choke, C. and T.P. 1,050 lb., T.D. 7,549 ft., 6-in. casing, 7,525 ft. porous Smackover lime 7,532 ft.

(Continued on Page 84)

By R. MARNE SANFORD

Shut-in Apco Extension Test Reopened, Flows 2,000 Bbl.

MIDLAND, Tex., Nov. 25.—Almost weekly for the past few months new and important developments have been seen for the deep Lower Paleozoic levels in the southern part of the West Texas Permian basin. Only a few weeks ago a new Simpson lime field was opened in extreme northern Pecos County, and during the past week either a new producing spot or a major extension to the Apco field was definitely assured.

The Apco field extension is Olson Drilling Co. and Bryce McCandless 1 Virginia W. Crockett, 2 miles southwest of the Ellenburger lime producing field and located 3,650 ft. from the south and 2,300 ft. from the east lines of Section 5, Block 110, T.C.R.R. Survey. The strike was first recorded almost a year ago, in January of this year, when it found saturation in the Ellenburger lime. Even though offering stimulus for a brisk drilling campaign for the then new Apco field, it was stated that little development would immediately result from the discovery. It was at that time gaged and marked as officially completed at a depth of 4,518 ft., pay being topped at 4,479 ft. The well flowed 286 bbl. in 2½ hours to rate a potential of more than 2,500 bbl. daily. Revealing somewhat the producing qualities of the comparatively new-found Ellenburger lime in the district, the well gaged a flow in excess the past week of 2,000 bbl. daily after being shut in continuously since last January. Flowing pressure on the well the past week was 110 pounds on the tubing and the gas volume was measured in excess of 11,300,000 cu. ft. daily. The oil is 43 gravity.

The opening and gaging of the well this second time is interpreted by operators to indicate an immediately forthcoming drilling campaign for the 2 miles of now semi-proven area between the well and the Apco field.

Development in Ector's New Field

Several weeks ago testing started at a well which indicated the opening of a new field about 5 miles east of the Penwell field. The well is still testing and has not been officially completed, however, new development has already started in the sector. The indicated discovery, Forest Development 1 Bradley, is bottomed at 4,362 ft. and has been treated with 10,000 gal. of acid. Latest test showed that the hole filled 1,350 ft. in 18 hours after being swabbed down to bottom.

The new test, Forest Development 2 Bradley, is 467 ft. from the south and west lines of Section 18, Block 43, Township 3s, T.&P. Survey, about ¾ mile west of the 1 Bradley.

SOUTHERN WEST TEXAS COMPLETIONS

Crockett County

Wildcat: Moore & Olson 1-C Halff, NE NE NE Sec. 68, Blk. 1, I.&G.N. Sur., dry at 1,502 ft.

Ector County

North Cowden field: Cities Service 9 Rhodes, 1,689 bbl., casing, 352 qt. shot, 4,070-4,196 ft.
Johnson field: M. J. Delaney 2-C Johnson, 870 bbl., tubing, 180 qt. shot, 4,970-4,140 ft.
I.T.I.O. Co. 2-A Johnson, 404 bbl., tubing, 165 qt. shot, 4,135-4,215 ft.
I.T.I.O. Co. 4-B Johnson, 1,296 bbl., 1-in. choke, 250 qt. shot, 4,050-4,150 ft.
Jordan field: Cosden 5 Kloh, 526 bbl., ½-in. choke, 565 qt. shot, 3,602-3,706 ft.

Pecos County

Apco field extension well: Olson & McCandless 1 Crockett, 996 bbl. in 10 hrs. and 45 min., ¾-in. choke, 2,000 gal. acid, 4,396-4,518 ft., Ellenburger lime.
Lehn field: R. G. Pattillo 15-B Sullivan, 81 bbl., ½-in. choke, 60 qt. shot, 1,671-1,703 ft.
Shearer field: Childress Royalty 3-A Shearer, 22 bbl., 40 qt. shot, 1,400-1,500 ft.

Ward County

Estes field: Gulf 145 O'Brien, 593 bbl., casing, 410 qt. shot, 2,641-2,776 ft.

Winkler County

Keystone field: S. W. Richardson 2 Keystone, 151 bbl., tubing, 360 qt. shot, 3,386-3,459 ft.

Upton County

McCamey field: Shell 18 Bowen, old total depth 2,195 ft., new total depth, 2,314 ft., old initial 45 bbl., new initial 223 bbl. oil and 35 bbl. water, pumping.

SOUTHERN WEST TEXAS DRILLING REPORT

Crane County

Gulf 1-F University, SE SE Sec. 22, Blk. 31, University Sur., drilling 8,308 ft.

Culberson County

Cecil Cothrun 1 Casey-Rounsoville, Sec. 7, Blk. 104, P.S.L. Sur., S.D. 1,020 ft., water from 1,012-20 ft.

Ector County

Forest Development Corp. 1 Bradley, SE SE Sec. 18, Blk. 43, Twp. 3s, T.&P. Sur., drilled broken pay 4,350-4,410 ft., bailing and testing, cemented back 4,380 ft., oil coming into hole at rate of 1½ bbl. hourly, P.B. 4,362 ft., treated 1,000 gal., rigging up pump for gage.

Loving County

H. C. McAuley 1 E. Hall, SE Sec. 60, Blk. 7, W.&N.W. Sur., T.D. 1,375 ft., fishing tools.

Menard County

Harry Baldwin 1 J. A. Leggett, 760 ft. from W and 900 ft. from S lines, Sec. 1, B.S.&F. Sur., S.D. 575 ft., (corrected depth).

Pecos County

Culbertson & Irwin 1 R. G. Heiner, NE NE Sec. 589, G.C.&S.F. Sur., Ordovician wildcat, drilling 2,575 ft.
S. D. Pattillo 1 O'Neil, Sec. 74, Blk. 10, H.&G.N. Sur., Ordovician test, est. 25 to 30 bbl. daily from 1,607-58 ft., testing.
S. D. Pattillo 1 Hoffman, SE NW Sec. 6, Blk. 141, T.&St.L. Sur., 2,000-ft. test, drilling 1,445 ft.
Cardinal 1-F White & Baker, 440 ft. from N and 3,050 ft. from E lines of Sec. 53, Blk. Z, T.C.R.R. Sur., drilling 1,720 ft.

Presidio County

Wilcox 1 Conring, Sec. 102, Blk. 4, H.&T.C. Sur., running 10¾-in. casing at 1,038 ft., S.D. 1,040 ft.
Wilcox 2 Jones-Coffield, Sec. 38, Blk. 34, H.&T.C. Sur., P.B. to 2,369 ft. from 2,399 ft., preparing to P.B. again, last report.

Reeves County

J. B. Dunnigan 1 A. B. Burchard, SW Sec. 7, Blk. 58, P.S.L. Sur., Delaware test, location.
Roy Johnson 1 Perkins, Sec. 18, Blk. 7-C, P.S.L. Sur., drilling 1,805 ft.

Sutton County

Domain 1 G. S. Allison, SW NE Sec. 91, Blk. 9, T.W. N.G. Sur., Ellenburger lime test, S.D. 1,098 ft.
S. B. Roberts 1 Allison, NW NE Sec. 44, G.H.&S.A. Sur., preparing ream 310 ft.

Terrell County

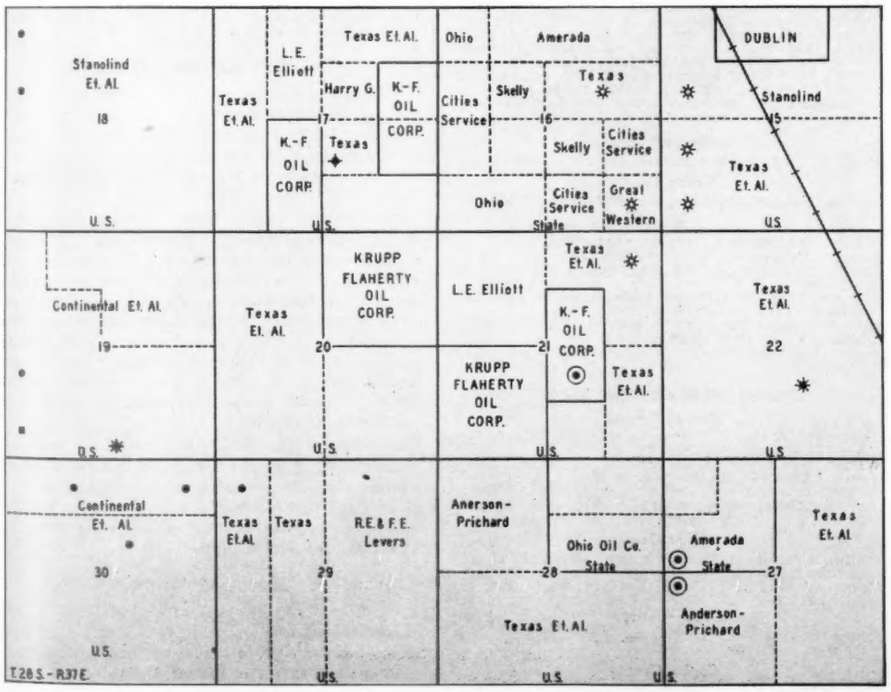
H. H. Sides 1 Rose, Sec. 15, Blk. 148, T.&St.L. Sur., rigging up spudder.

Ward County

Fitzpatrick & Slack 1 Wilson, Sec. 145, Blk. 34, H.& T.C. Sur., 1½ mi. SE of discovery well, drilling 4,000 ft.
Gulf 4 Wristen, Sec. 13, Blk. 5, H.&T.C. Sur., scheduled Ordovician test, top Ellenburger 9,022 ft., P.B. to 8,836 ft., old T.D. 9,167 ft., twisted off drill pipe at 8,694 ft. while drilling by junk, set whipstock 8,712-33 ft., T.D. in new hole 8,992 ft., washing to free stuck drill pipe at 3,200 ft.
Sinclair Prairie 1 Wirt Davis, 330 ft. NW, 2,310 ft. SW lines, Sec. 32, Blk. 4, H.&T.C. Sur., S.D. 3,864 ft., sulfur water, preparing quit as dry.

Winkler County

Gulf 147 O'Brien, SE Sec. 11, Blk. F, G.&M.M.B.&A. Sur., est. 3,000,000 cu. ft. gas 2,677-80 ft., pay from 2,785-88 ft., flowed 75 bbl. daily, drilling 2,841 ft.



A possible connection between the Eaves pool of southern New Mexico and the Scarborough area, Winkler County, Texas, is seen in three recently drilled wells in the extreme southeastern part of New Mexico. Anderson-Prichard 1 Morris, NE NE SW 27-26-37, and Texas 2 Rhodes, NW NW SE 27-26-37, were completed in the 3,200-ft. pay last fall. Krupp-Flaherty 1-C Government, NW SE 21-26-37, is not yet officially gaged, but is reported to be a 250-bbl. well

NORTHERN WEST TEXAS

Terry County held the attention in the northern part of the West Texas Permian basin as 2 wildcat tests approached crucial stages. One of them, Gulf 4 Mallett, 3 miles west of the Terry County portion of the Slaughter field, is drilling ahead as the first actual deep exploratory test for the area. No. 4 Mallett, located in Section 5, Block X, P.S.L. Survey, found only slight stains of oil and pin-point porosity in the regular pay level of the Slaughter-Duggan field and was drilling, at the close of the week, below 5,140 ft. in lime. Cores from 5,091 to 5,107 ft. and from 5,107 to 5,109 ft. recovered slightly stained lime with slight porosity and from 5,111 to 5,115 ft. water lime with slight porosity was found. The operator is expected to carry the hole about 500 ft. deeper to thoroughly test the entire zone and any possible zones immediately below the regular pay, but it was expected that the test would not continue in search of the Ordovician level.

Four miles northwest of Wellman in Terry County

(Continued on Page 101)

Two Fields in Clay County Find New Deeper Pays

By
R. MARNE SANFORD

WICHITA FALLS, Tex., Nov. 25.—Two of the many recent discoveries in the Fort Worth basin area of Clay County have been given new producing levels, they being the Ross field and the Hapgood field.

The Ross field in the northwestern part of Clay County was definitely given a new level and at the same time a mile west extension by Petroleum Producers 1 O. O. Ross, Section 8, B.B.B.&C Survey. The new level is only slightly deeper than the discovery horizon, however, following the definite classification of typical Pennsylvanian age fields, it must be considered a entirely different pay section. The discovery well and all wells completed subsequently have been from the Smithwick lime from about 5,340 to 5,400 ft. The new level is the typical conglomerate pay found more extensively in Montague County to the east. The conglomerate was found from 5,543-59 ft. and, before acidization, yielded only a little oil. After being treated with 5,000 gal. of acid it kicked off to flow ungaged and steadily into the pits for 3 hours. One source credited the well with producing from the regular Smithwick lime pay, topped 135 ft. lower than producers in the field proper. Disregarding slight surface elevation differences between tests in the field and this outpost well, the pay section was topped 201 ft. lower. Future drilling in the intervening area will definitely establish the facts regarding the pay level in the new well, however, until then, 201 ft. of reverse dip on the extreme north rim of the basin is considered exceptional by many operators in the area.

Hapgood Deep Pay

The other field receiving a new pay level is the Hapgood area in extreme eastern Clay County and only a few miles west of Montague County's Ringgold field. Missing saturation in the regular 5,975-ft. level of the discovery well, Lipscomb & Grimes 1 Hapgood, Block 68, Marion County School Lands, ½ mile southeast of the discovery well, flowed 151 bbl. of oil and 500 bbl. of water on latest gage from a new and slightly deeper level found from 6,077-6,103 ft. It is expected that the hole will be plugged back slightly in an attempt to shut off the water, believed coming in from the bottom few feet of hole.

Also in the Hapgood field abandonment was seen likely for a deep test which found only small shows in the regular 5,975-ft. level. It is Phillips 1 Hapgood, Block 60, Marion County School Lands Survey, west offset to the discovery well. The Simpson of Upper Ordovician age was topped at 6,190 ft. and the Ellenburger was entered at 6,420 ft. Slight shows were reported found from 6,442-65 ft., however, these were not tested.

Gas Increases in Jack Well

A possible discovery well in Jack County drew new attention late in the week when the gas volume was reported to have increased from 500,000 cu. ft. to 1,500,000 cu. ft. The well is Rathke Oil 1 H. G. Moseley, J. Harrison Survey. The gas increase marked the second sand break in the Marble Falls lime. Gas was first found from 4,500 to 4,510 ft. with a slight show of oil from 4,533-34 ft. In deepening the well found more gas from 4,745-50 ft. in sand. The hole is bottomed at 4,750 ft. where it is reported caving. The 7-in. casing will either be reamed down from its present seat at 4,465 ft. or a 5-in. liner will be set. The hole is to be carried deeper.

Montague Wildcat

Sinclair Prairie Oil Co., one of the leaders in the year-old Fort Worth basin play, has staked location for another wildcat in Montague County. The new test is in the northwest part and is contracted to the 5,900-ft. level. It is 1 William G. Hawkins, 631 ft. from the north and 370 ft. from the east lines of the Hawkins farm, Section 17, H.&T.C. Survey, about 3 miles southeast of Ringgold and 1⅛ miles north of the company's recently abandoned 1 Milam.

A new location for the recently opened Benton field just east of the town of Nocona and east of the Rogers & Rogers field, is Phillips 1 C. P. Dodson, 5,100-ft. test 330 ft. from the south and 408 ft. from the east lines of a 60-acre tract in Block 11, T.E. Survey. It is a west offset to a new completion by Stanolind on the Dodson tract.

NORTH TEXAS COMPLETIONS

Archer County

Hull-Silk field: Cochran & Cain 11 Little B, 40 bbl., 1,372-75 ft.
Deep Oil Dev. 4 Finley, 1,275 bbl., 4,297-4,355 ft.
Dillard 6 Nichols, 1,105 bbl., 4,325-4,400 ft.
Magnolia 15 Parrish, dry at 5,267 ft.
Petroleum Producers 3 Anderson C, 1,075 bbl., 4,364-4,420 ft.
Olney field: Desterson 1 Herron, 25 bbl., 860-62 ft.
Holliday field: Shappell Oil 5 Jackson, dry at 615 ft.
Bert Ligon 10 White, dry at 1,673 ft.
Wildcat: Young & Woody 1 Roberson, 54 bbl., 1,393-99 ft.

Clay County

Hapgood field: Norwood 2 Hapgood, 2,290 bbl., 5,965-83 ft.
Henderson field: Shell 6 Henderson, 816 bbl., 3,214-3,585 ft.
Wildcat: Norwood 1 Shipley, dry at 6,002 ft.

Cooke County

Muenster field: Bridwell Oil 7 Flusche, 10 bbl., 1,190-1,208 ft.
Gill 4 Wilson, dry at 1,080 ft.
Metzner & McKee 1 Hess, dry at 800 ft.
Trumpter Pet. 13 Stacey, 25 bbl., 762-69 ft.

Jack County

Mathis field: Steed & Cooper and Wilson 2 Stewart, 300 bbl., 2,882-2,922 ft.
Bryson field: Three Bee Inv. 2 Epperson, 325 bbl., 3,025-3,113 ft.

Montague County

Benton & Holmes field: United Producers 1 Custers, 245 bbl., 3,620-3,718 ft.

Wichita County

Burkburnett field: Akin 2 Oats, 10 bbl., 1,312-25 ft.
Jack Story, Jr., 1 Hefley, dry at 1,605 ft.
Electra field: Conyers 2 Jennings, dry at 985 ft.
J. E. Farrell 51 Waggoner, 10 bbl., 807-15 ft.
Keener Oil & Gas 21 Burnett, 9 bbl., 1,387-1,412 ft.
K.M.A. field: Hamon and Hanlon-Buchanan 33 Fassett & Tuttle, 571 bbl., 3,915-95 ft.
High Point Oil 2 Burnett B, 569 bbl., 4,035-4,133 ft.
Shell 13 Griffin, 1,025 bbl., 3,699-3,816 ft.
Southport Pet. 20 State lands, abandoned location.
Texas Co. 21 Waggoner A, 400 bbl., 3,797-3,853 ft.

Wilbarger County

Fargo field: Amerada 1 Parker, 100 bbl., 4,407-55 ft.

Young County

Markley field: Graham Roy Co. 5 McCloud, 4 bbl., 890-94 ft.
Graham Roy Co. 6 McCloud, 3 bbl., 893-96 ft.
Olney field: Kriss 3 Jeffery, dry at 875 ft.
Wildcat: Reischam 1 Holbert, dry at 805 ft.
Graham field: Rowan Drlg. Co. 2 Sloan, 720 bbl., 3,754-75 ft.
Target Drlg. Co. 1 Cerley, 1,500,000 cu. ft. gas, 3,075-98 ft.
Newcastle field: Texas Co. 2 Jeffery, 9 bbl., 755-57 ft.
Wootten & Reed 10 Horton, dry at 641 ft.
Sewell field: Zwelfel Tr. 3 Pistole, 1,216 bbl., 3,830-3,902 ft.

NORTH TEXAS DRILLING REPORT

Archer County

Adams Oil & Gas 1 Turbeville, Lot 39, J.C.S.L. Sur., 5,000-ft. test, drilling 3,947 ft.
Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., 5,300-ft. Caddo lime test, drilling 3,205 ft.
Jack Kadane 1 Griffin, SW SE Blk. 13, P.P.C.S.L. Sur., 4,500-ft. test, 1⅛ mi. E Griffin field, show oil 4,337-51 ft., T.D.; 6⅝-in. casing 4,337 ft.

Baylor County

British American 1 Turbeville, Sec. 198, T.&N.O. Sur., drilling 2,519 ft.
Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, S.D. 2,215 ft.

Clay County

Carlos Wagner 1 L. C. Thaxton, Sec. 2, T.&N.O. Sur., 6,500-ft. test, first report.

Cooke County

Dick Eubank 1 Sam Seagraves, SE cor. O. M. Gray Sur., Abst. 415, near Hood, 2,200-ft. test, Ordovician, drilling 825 ft.

Denton County

Amon G. Carter 1 W. P. and A. P. Allen, S. Westbrook Sur., running 7-in. 5,391 ft.

Grayson County

Texas Co. 1 Hutchinson, Samuel Stewart Sur., northeast corner of county, 7,500-ft. test, drilling 4,250 ft. (corrected).

Hood County

W. G. Martin 1 W. F. Thormann, E cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, location.
Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, T.D. 1,180 ft.

Jack County

Continental 1 Robertson, M. J. Swan Sur., Abst. 1650, drilling 5,090 ft.
R. A. Conkling 1 M. Hoofle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, S.D. 3,410 ft., fishing.
Rathke Oil 1 Moseley, J. Harrison Sur., Abst. 259, 6⅝-in. at 4,465 ft., show gas 4,498-4,500 ft., made spray oil and gas, show gas est. 1,500,000 cu. ft. from 4,745-50 ft., T.D. 4,750 ft., prep. ream casing and test.
Hanlon-Buchanan 1 Smith, NW cor. Smith tract in S. H. Tilgham Sur., 8 mi. SW Jacksboro, 3,150-ft. test, show oil 2,937-46 ft., 6⅝-in. 2,855 ft., testing.
K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, derrick.
Steed & Wilson 1 M. L. Barrey, SW part of E.F.I.W. Sur., Abst. 1562, 3,200-ft. test to Bryson sand 6⅝-in. at 3,082 ft., show oil 3,095-3,134 ft., testing.

Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, 6⅝-in. casing at 6,641 ft., T.D. 6,651 ft., perf. casing 5,775-5,860 ft., swabbed dry, perf. and squeezed, W.O.C.
T. F. Hunter 1 Fatheree, L. S. Gilliland Sur., 3 mi. W Illinois Bend, 6,000-ft. test, drilling 2,872 ft.
Henson & Benson 1 Joe Benton, Abel A. Lewis Sur., 2 mi. SE of Ringgold field, 10-in. 508 ft.
J. G. Hammond 1 Jester, 84-acre tract in E. Wingate Sur., Abst 835, 2 mi. W Mallard, 6,500-ft. test, drilling 5,174 ft.

Parker County

Higginbotham 1 Gilbert, T.&P. Sur., Abst. 1958, T.D. 4,800 ft., fishing.

Tarrant County

Bruce Sullivan 1 W. C. Putnam, 200-acre tract in Milley Gilbert Sur., 6,500-ft. test, drilling 1,500 ft.

Wilbarger County

Charles Barnes and R. A. Andrews 1 Clarida, NE Sec. 97, Blk. 14, H.&T.C. Sur., drilling 1,758 ft.

Wise County

Cranfill & Rogers 1 McKay, Sec. 8, Falls C.S.L. Sur., 7-in. at 5,796 ft., coring pay 5,797-5,858 ft., testing.

Young County

Ben H. Rankin 1 Marry Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, small showing oil 3,575-3,600 ft., 5½-in. 3,565 ft., drilling plug and bailed dry, S.D. 3,613 ft.

WEST CENTRAL TEXAS

Two closely watched tests were recorded as failures the past week, one each being in Callahan and Jones counties. Another well was brought in in the recently opened Dobbs (South Carbon) field in Eastland County and in Throckmorton County a deep wildcat test is planned for the near future.

The Callahan failure, which is being deepened, is A. R. Forster and Rhodes Drilling Co. 1-A N. M. George, 4 miles east of Baird and located in NW Section 75, B.O.A. Survey. About 10 days ago it indicated the opening of a new Palo Pinto lime field when saturation was cored from 2,139-47 ft. The casing was cemented and when plug was drilled it was found that the cement had sealed off the saturated section. It was gun-perforated and given a 250-qt. shot, however, the well failed to respond. It was being carried deeper to finish contract depth of 2,700 ft.

In Jones County failure was listed for Ungren & Frazier and J. F. West 1 Carlton, Section 189, B.B.B.&C. Survey, west offset to the Palo Pinto discovery in the Olson field just north of Avoca. It missed the Palo Pinto lime pay found in the discovery well and was quit at a total depth of 3,246 ft.

Eastland County

The Dobbs or South Carbon field in Eastland County, discovered last year by Dobbs Oil Corp., Dallas, in the Caddo lime, was given a new producer and slight extension when J. O. Fox & Sons, Dallas, drilled in their No. 1 J. H. Vaughn, Section 35, Block 2, H.&T.C. Survey. The lime section was logged with saturation from 2,570-2,676 ft. Only a slight show was reported naturally, however, after a 360-qt. shot the well responded to flow by heads and clean out. This is the fourth completion

(Continued on Page 87)

By
NEIL WILLIAMS

Third Producing Sand Found On North of Ogburn Field

HOUSTON, Tex., Nov. 25.—Oil production from a third producing sand was being opened on the north side of the Ogburn field, Harris County, as L. M. Josey 1 fee was flowing pipe-line oil while cleaning out through a 7/64-in. choke with tubing pressure 150 lb., and casing pressure 2,600 lb. Drilled to a total depth of 7,250 ft., the well is being completed through perforated casing at 7,020-24 ft., following a 48-minute drill-stem test which showed 1,625 lb. working pressure, and recovered 200 ft. of oil. The well tested gas and distillate in the 6,900-ft. sand and another sand section topped at 7,130 ft., showed the same results. The well is located about 1,100 ft. west of Goldston 1 Josey which produces crude from sand at 6,600 ft.

Galveston Bay Activity

Humble 2-C-46 State, completed the previous week as the discovery well of the Fishers Reef prospect, offshore from Chambers County in Galveston Bay, flowed 187 bbl. of 32.6-gravity oil on a state potential test flowing through a ⅛-in. choke. Tubing pressure was 1,535 lb. Production is from the Frio sand at 8,961-63 ft.

To the south and located on the Smith's Point prospect, just northeast of the Red Fish Reef field, Shell Oil Co., Inc., abandoned 1-199 State at a total depth of 10,731 ft. No shows were reported, and the well ran several hundred feet low. East of the Red Fish Reef field Humble 3-A-248 State is bottomed at 10,419 ft., with 7-in. casing cemented at 10,408 ft., and a test is slated to be made at intervals from 10,321-75 ft. where broken sand and shale with oil and gas shows were logged. Location for another test was made by Humble which is driving piling for 8-A-223 State.

Wilcox Trend

The Wilcox trend drew considerable attention as two wells in Lavaca and San Jacinto counties approached their objective. East of Hallettsville, Lavaca County, M. McMurray 1 Allen was drilling in shale below 7,860 ft. and the well was scheduled to start coring for the Wilcox at the close of the week. In the Cold Springs area McDonald Oil Co. 1 Coline is coring shale below 7,795 ft. The Wilcox is reported to have been topped, but the depth was not available. Another test which is nearing its objective is Superior 1 McWhorter, drilling in shale below 7,835 ft. The Operculina was topped at 6,738 ft.

In Colorado County, and located about 1,500 ft. northeast of the discovery well of the Sheridan field, Shell 3 Plow Realty Co. is bottomed at 8,691 ft., and the hole is expected to be drilled deeper following a drill-stem test at 8,685-91 ft., which recovered 186 ft. of gas-cut drilling mud.

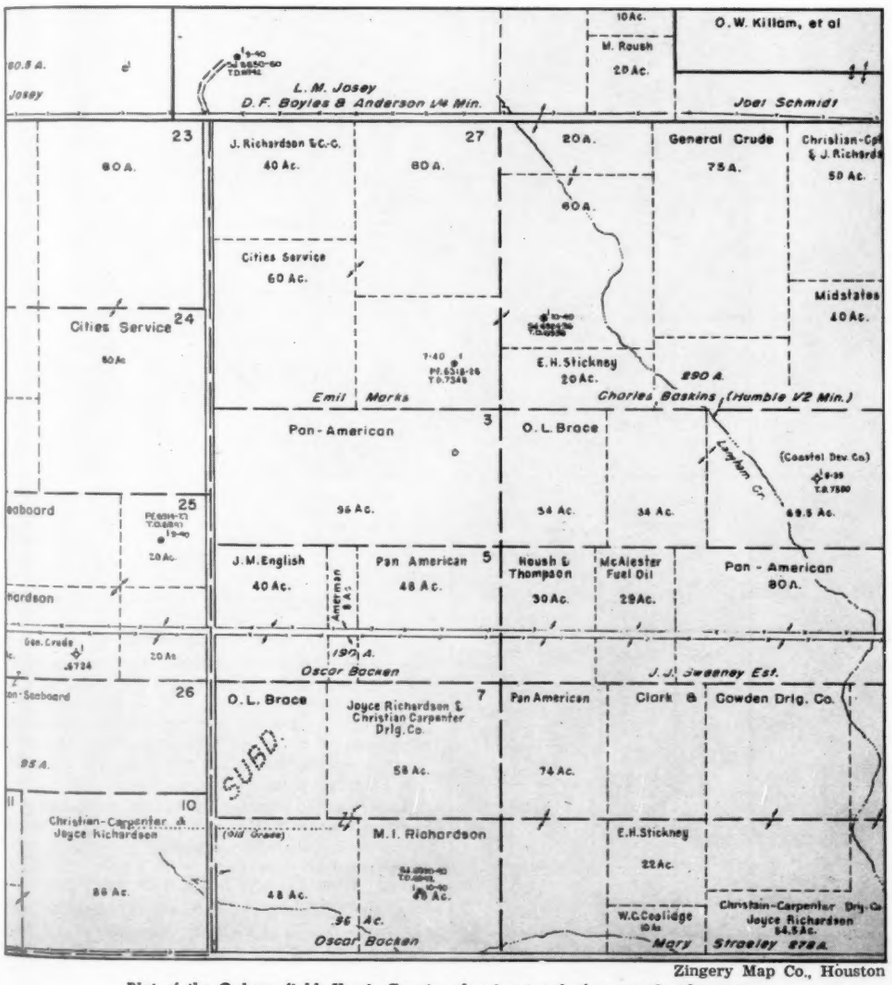
In the Alta Loma field, Galveston County, Stanolind 1 Hulen is being retested after the well flowed an unestimated amount of fluid, of which 65 per cent was salt water and 35 per cent oil. The well was drilled to a total depth of 9,197 ft., and the production test was made through perforated casing at 9,184-92 ft.

Location for another Cockfield test was staked in the Spurger gas field by Republic Production Co. for 5 Hurd, located about ½ mile west of 3 Hurd, a gas ser, and about 3,700 ft. north of the company's 21 Hurd, a Wilcox producer in the Joe's Lake field.

A slight extension to the South China field, Jefferson County, was recorded as Pan American 4 Fontenot flowed pipe-line oil on a drill-stem test through perforated casing at 7,883-88 ft. Screen and liner was set and the well was cleaning out at the close of the week.

On the northeast side of the Port Neches field, Orange County, Texas 12 W. H. Stark extended production a short distance when it flowed 100 bbl. per day through a ¼-in. choke from sand topped at 4,540 ft. and bottomed at 4,564 ft., the total depth.

Location for a Wilcox test was announced for Washington County by John Deering who is scheduled to start drilling on 1 H. C. Buck, a projected 7,000-ft. test located in the James Lynch Survey.



Zingery Map Co., Houston

Plat of the Ogburn field, Harris County, showing trend of recent developments

TEXAS GULF COAST COMPLETIONS

Brazoria County

West Columbia field: Gulf 5 Mays, 396 bbl., 3/16-in choke, T.D. 5,694 ft.
Texas 98 Hogg, dry, T.D. 3,622 ft.

Chambers County

Anahuac field: Gulf 15 Wilcox, 649 bbl., ¼-in. choke, perf. casing 7,040-68 ft., T.D. 7,077 ft.
Humble 54 Middleton, 411 bbl., ¼-in. choke, top sand 7,211 ft., T.D. 7,227 ft.
Fishers Reef field: Humble 2-C-46 State, 187 bbl., ⅛-in. choke, perf. casing 8,961-63 ft., T.D. 9,005 ft.
Wildcat: Humble 4-A-203 State, Galveston Bay, T.D. 8,966 ft.
Shell 1-199 State, Galveston Bay, dry, T.D. 10,731 ft.

Fort Bend County

Blue Ridge field: R. L. P. Production Co. 4 Gulf, 399 bbl., ¼-in. choke, top sand 3,720 ft., T.D. 3,798 ft.
Sugarland field: Sam F. Bashara 2 Sugarland Industries, dry, T.D. 5,223 ft.
Thompson field: Gulf 7 Bordages, 590 bbl., ¼-in. choke sand 8,291-8,313 ft., T.D.

Galveston County

Wildcat: Maco Stewart 1 Stewart Title & Guaranty Co., dry, T.D. 7,020 ft.

Harris County

Pierce Junction field: Rio Bravo Oil Co. 16 Settegast, 343 bbl., ¼-in. choke, top sand 3,412 ft., T.D. 3,429 ft.

Jackson County

West Ranch field: Humble 12 Toney, 587 bbl., ¼-in. choke, top sand 5,747 ft., T.D. 5,751 ft.
Magnolia 2 J. M. Bennett, 441 bbl., ¼-in. choke, perf. casing 5,755-61 ft., T.D. 5,768 ft.

Liberty County

Esperson field: General Crude Oil Co. 22 Davis, gas well, perf. casing 7,535-42 ft., T.D. 9,018 ft.
South Liberty field: Harris Oil Co. 1 Chambers, 320 bbl., ¼-in. choke, top sand 928 ft., T.D. 953 ft.
Sun 60 Mitchell, 18 bbl., pumping, perf. casing 1,657-67 ft., T.D. 2,125 ft.

Matagorda County

Bay City field: Atlantic 2 Glover, 324 bbl., ¼-in. choke, top sand 8,181 ft., T.D. 9,271 ft.
Wildcat: Helmerich & Payne 1 Herman, dry, T.D. 9,502 ft.

Orange County

Port Neches field: Texas 12 W. H. Stark, 100 bbl., ¼-in. choke, top sand 4,540 ft., T.D. 4,564 ft.

Wharton County

Magnet field: Humble 26 Cockburn, 129 bbl., ⅛-in. choke, top sand 5,543 ft., T.D. 5,545 ft.
Withers field: Texas 63 Pierce, 109 bbl., ⅛-in. choke, perf. casing 5,242-58 ft., T.D. 5,382 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County

J. A. Gray 1 J. E. Ransom, NE of Sandy Point field, C. S. Gorbett Sur., drilling shale 3,015 ft.
Humble 2 Hubbard, Rowan field, drilling shale 7,857 ft.
Phillips 1 Houston Farm Development Co., Chocolate Bayou field, T.D. 10,006 ft., cutting sidewall cores.
Phillips 1 Triangle Development Co., Chocolate Bayou field, drilling shale 1,196 ft.
Skelly 1 R. D. MacDonald, SE Pledger gas field, coring shale 8,661 ft.
Stanolind 1 Burgess, Rowan field, drilling shale and lime 4,244 ft.

(Continued on Page 84)

By
STAFF CORRESPONDENT

Gas Field Opened in Viola Lime, South Caddo County

THE second Viola lime pool for the north flank of the Washita Mountains was definitely opened Friday, 5 miles northwest of the town of Apache in southern Caddo County.

The discovery well is Texas 1 Smith, in C NE NW 2-5n-12w, situated 12 miles west of the Cement field. It is located on a major structure on which Texas Co. has blanket leases of more than 12,000 acres.

Drilled to 4,396 ft., the wildcat flowed an estimated 25 bbl. of salt water an hour; plugged back to 2,960 ft., the well did an estimated 3,000,000 cu. ft. of gas a day, which will be saved.

Viola lime was topped at 2,545 ft., with the Simpson dense lime at around 3,715 ft.; at near total depth the bit went back into Viola lime. Cores showed formation dip of as much as 80°.

Belief is the company will drill another test on the structure, either to the northwest or the southeast of the No. 1 Smith.

Cumberland Pool

Pure Oil Co. has completed its eleventh well in the Cumberland pool, 1 Little 106, SW SW SW 27-6s-7, Bryan County. The well flowed 382 bbl. in 19½ hours through 1-in. choke. Total depth is 5,080 ft. in the Bromide. Other wells are being steadily pushed down in the pool which is assuming major proportions. In Marshall County Pure 4 Little 100, NE NW SE 29-5s-7, is at 4,062 ft. in brown lime; 1 Thomas 203, SW NW NE Section 28, found the top of the Hunton at 3,390 ft. and is at 3,395 ft.; 2 Metz 105, NE SW NW Section 28, is at 2,905 ft. in black shale having topped the Mississippi lime at 2,655 ft.; 3 Little 101, SW SW NE Section 28, is in brown lime at 4,106 ft.

In Bryan County Pure 2 Little 106, SW SW SW 28-5s-7, set 10¾-in. casing at 824 ft.; 1 Park College, SW SW SE Section 27, is installing pumping equipment. At a plug-back depth of 5,118 ft. the latter well has been swabbing an estimated 40 to 100 bbl. daily.

Dill Pool

In the Dill pool John Droppleman 4 Dill C, SE SE NE 34-12-8, promises a further northwest extension of the pool as it is drilling ahead from a saturated Cromwell sand section at 3,640-48 ft. At that depth it was reported making 10 to 20 bbl. by heads per hour. A west offset, 6 Dill, was a location.

Love County Leasing

A wildcat deal is apparently under way in the area northwest of Marietta and east of the Oswalt pool in Love County. The biggest lease play is on the Indian Meridian in Townships 6s-1w and 6s-1e.

At the recent Muskogee Agency lease sale Carl J. O'Hornett paid $16.66 an acre for the SE SE of Section 30 and N½ NW 33-6s-1e. Since that time the Magnolia bought the SW 33-6s-1e; H. L. Sturm took the S½ SW 29-6s-1e, and J. W. Dixon got the north 18 acres of Lot 3 and SW SW 30-6s-1e, and SE SE 25-6s-1w.

Sinclair Prairie bought the S½ NE NE and S½ NE Section 24, and S½ SW NW and NW SW and N½ SW NW and NE SE NW 14-6s-1w. Other major companies have protection in the area.

Lincoln County Wildcat

Fidelity Royalty Co. of Oklahoma City has earmarks of a new field of some sort at 1 Robertson, SW SW SW 3-14-6e, west of Stroud in eastern Lincoln County.

Failing to show after a 50-qt. shot at 3,201 ft., the hole was plugged back and shot with 200 qt. in the Prue sand zone at 2,981-3,025 ft. There was an estimated 1,000 ft. of fluid in the hole after the shot.

Estimated Daily Production

Estimated daily production in Oklahoma for the week ended November 23, and for the preceding week, was as follows:

	Barrels	
	Nov. 23	Nov. 16
Allen	5,000	5,025
Billings	6,225	6,100
Burbank	7,050	7,000
South Burbank	7,150	7,100
Balance Osage	16,900	16,500
Blackwell district	3,325	3,325
Bristow-Slick	6,050	5,850
Chandler	1,050	1,050
Crescent	2,025	1,725
Cromwell	2,950	2,950
Cushing-Shamrock	9,100	8,900
Duncan	3,550	3,525
Edmond	3,950	3,900
Fish	3,000	3,000
Fitts	14,750	14,600
Jesse	2,050	2,025
Graham-Fox	2,275	2,250
Gray	850	850
Healdton	8,500	8,525
Hewitt	5,750	5,300
Keokuk	2,875	2,800
Konawa	1,075	1,000
Lucien	6,875	6,900
Moore	1,175	1,200
Northeastern counties	17,300	17,150
Oklahoma City	96,550	97,150
Olympic	1,800	1,850
Ramsey	3,600	3,600
Sasakwa	1,400	1,450
Sholem-Alechem	2,575	2,550
Seminole distrfct:		
Bowlegs	6,500	6,600
Carr City	2,125	2,125
Dora	1,750	1,800
Earlsboro	3,900	4,075
East Earlsboro	1,800	1,700
South Earlsboro	475	500
Little River	6,350	6,425
East Little River	650	625
Maud	550	500
Mission	1,200	1,200
Seminole	6,400	6,650
East Seminole	1,075	1,050
Searight	1,975	1,950
Total Seminole	34,750	35,200
St. Louis-Pearson	22,250	22,600
Tatums-Tussy	4,400	3,800
Tonkawa-Garber-Thomas	3,550	3,500
Wewoka	1,600	1,550
Yale-Jennings	2,975	2,900
Other pools	84,675	81,775
Total Oklahoma	400,925	396,475

Cement Gas Field

Two more big gas wells have been completed in the Cement field of Caddo County, while work was starting at another test.

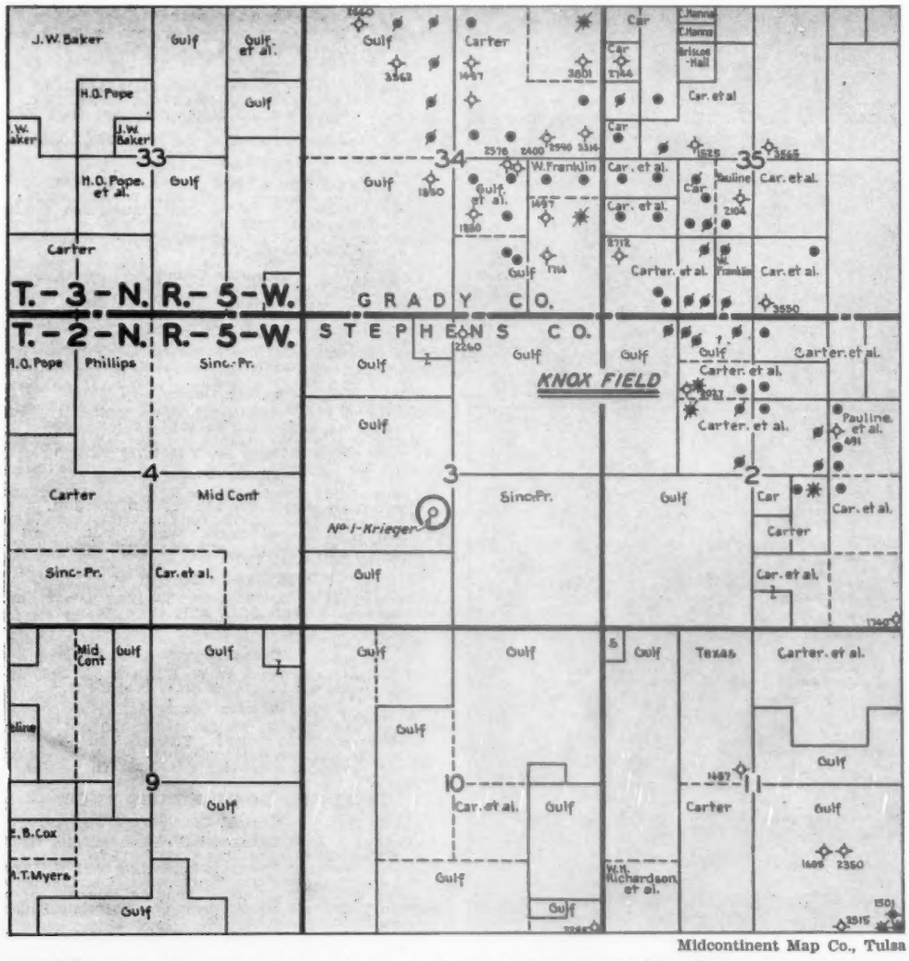
Magnolia 7 Hedlund, SE NE NE 11-5n-9w, tested 57,000,000 cu. ft. of gas a day from sand at 5,038-80 ft. Palmer Oil 3 Sterba, NE SW 35-6n-10w, did 66,000,000 cu. ft. from the 5,100-ft. horizon.

Ohio Oil and Ramsey Petroleum companies were starting work at 7 Rigney, a recent location; Johnson-Kemnitz, Inc., has the contract.

New Osage Layton Sand Pool

A new Layton sand area has been opened in southern Osage County at the C. C. Cummings et al 2 Peary Canyon, SW NE NW 31-22-9e, which swabbed at the rate of 20 bbl. of oil a day after plug was drilled. The

(Continued on Page 99)



Midcontinent Map Co., Tulsa

Gulf 1 Krieger is attempting to find production on the flanks of the Knox field in Grady County. The test is scheduled to go to 6,500 ft. Production from the Knox field is mostly found from 1,300 to 2,300 ft.

By
STAFF CORRESPONDENT

Northwest Kansas Lease Play Follows Graham Discovery

THE northeastern and northwestern sectors of Kansas are the scenes of plays of increasing importance. The discovery of oil in R. W. Shields et al 1 Paxson, NE NE NE 11-8s-24w, will increase the activity which has already started in Graham and neighboring counties. The Shields discovery extends the play along the Barton arch a distance of some 18 miles from the Morel pool and is, thus, of primary importance.

The history of development along this arch has been the location of a single pool, followed by intensive prospecting with the discovery of a number of pools, most of which later coalesce into large fields. At a later date, crosstrends are found and production is extended to the southwest along these trends. The Stafford County play which has produced such good results in such a southwest-trend play, branching out from Silico. Whether the Shields discovery will result in successful development of this kind or not cannot be predicted at this time, but there is considerable evidence that the industry is not going to miss any chances.

Leasing Campaign

Carter is reported taking the lead in leasing in Phillips, Graham and Norton counties, northwest Central Kansas, following the Graham County high-gravity oil discovery and a recent discovery in Phillips.

Several seismograph crews are shooting the area, reported to be working for the Carter, latest work being in Townships 2s-18w and 3s-18w. Phillipsburg appears to be center of operations at this time.

Buyers for other companies are combing the area, with a result that most of the open acreage is already taken. The play joins that in southwestern Nebraska, where Carter Oil and Sinclair Prairie are doing bulk of the buying.

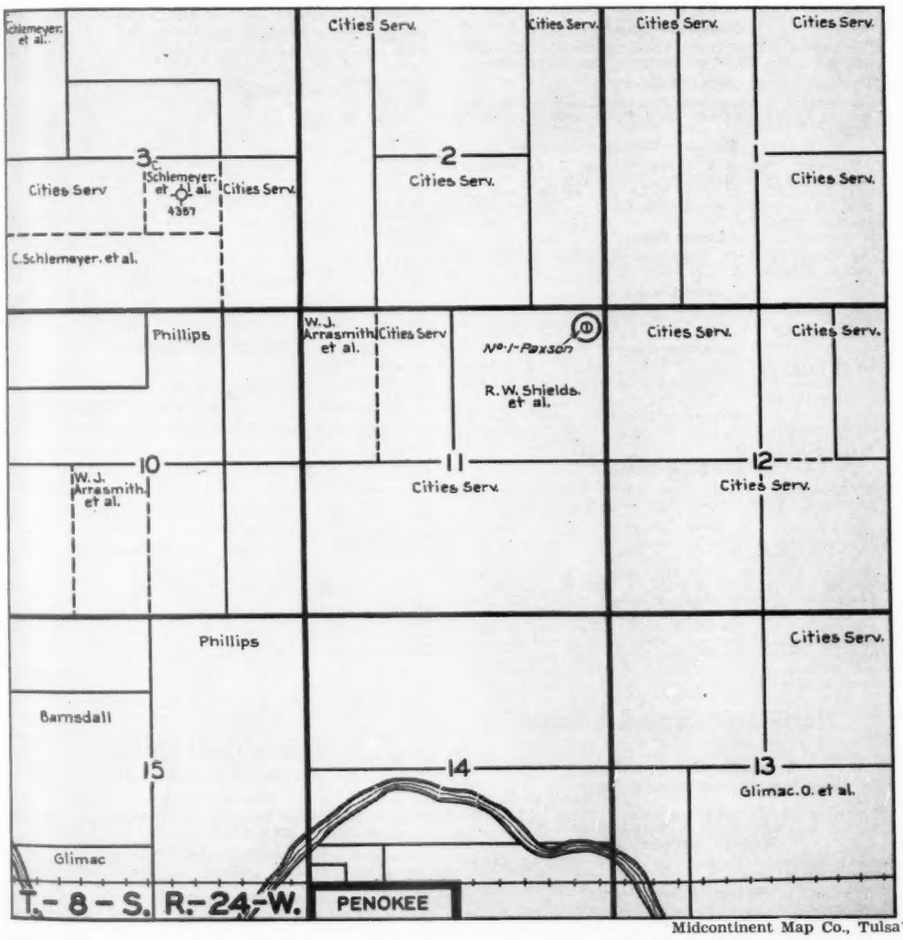
The Shields test is particularly interesting in that it is producing from an as-yet-undetermined horizon in the Marmaton, a group which does not ordinarily produce in this part of Kansas. The well was drilled to the Arbuckle at 3,965-4,104 ft., casing was set and perforated at 3,740-56 ft. After acidization, oil rose 2,000 ft. in the hole.

Northeastern Activity

Following the increase in activity in the Falls City area, resulting from the entry of another major, the Ohio Oil Co., into the region, additional locations were staked in northeastern Kansas. These include Barnholdt 1 Elliott, S½ SE SW 31-3-20 in Doniphan County and Dan McLaughlin & Son 1 Thorp, C NE NE 27-10-20.

Barton County

Prusa area: Derby Oil 2 Bernsdorff-Janke, SE NW NE 33-16-11w, swabbed 76 bbl. an hour in 2-hr. test, maximum potential 3,000 bbl., Arbuckle 3,331-39 ft., T.D.



Midcontinent Map Co., Tulsa

A possible pool opener which will extend the productive area on the Barton arch a distance of 18 miles. R. W. Shields et al 1 Paxson will be the forerunner of an active campaign which will extend into southwestern Nebraska. The well is not yet completed but is testing production found in a pay in the Marmaton group

Rick pool: C. L. Carlock 1-B Rick, E½ NE NE 12-19-11w, made 50 bbl., Arbuckle, 3,360 ft.

Cowley County

Wildcat: Shell 1 O'Neill, NE cor. 27-32-3, dry, T.D. 3,476 mostly water, Kansas City 2,595 ft., Oswego 2,842 ft., Bartlesville 3,040 ft., Mississippi lime 3,110 ft., Misener 3,419 ft., Arbuckle 3,421 ft.

Frog Hollow pool: Hawkeye 3 Moon, NE NW NW 21-32-5, flowed 284 bbl. in 8 hr., Bartlesville 3,041-65 ft., T.D.

Estimated Daily Production

Estimated daily production for Kansas for the week ended November 23, and for the preceding week, was as follows:

	Barrels	
	Nov. 23	Nov. 16
Oxford City	700	750
Burrton	7,300	7,350
Ritz-Canton	3,800	3,800
Graber	2,500	2,350
Hollow-Nikkel	1,400	1,450
Lerado	900	950
Voshell	1,800	1,800
Wellington	1,500	1,450
Ellsworth County:		
Lorraine	1,150	1,250
Other pools	4,725	4,905
Rice-Barton counties:		
Bloomer	5,000	5,150
Chase	5,750	4,850
Geneseo	3,700	4,100
Raymond	850	300
Silica	17,350	16,400
Keesling	650	1,000
Wherry	2,800	4,050
Miscellaneous Barton	5,005	4,995
Trapp district	16,750	15,650
Balance Russell County	17,450	18,150
Sedgwick County	3,150	3,250
Ellis County:		
Bemis	9,300	10,350
Burnett	5,450	5,850
Miscellaneous	2,105	630
Kingman County	1,020	965
Stafford County	9,735	8,285
Greenwood County	8,150	8,200
El Dorado	7,050	7,000
Other fields	43,810	47,240
Total Kansas	190,850	192,200

Ellsworth County

Stoltenberg pool: Aylward Prod. 2 Boye, E½ NW SW 9-16-10w, pumped 47 bbl. in 8 hr., Arbuckle 3,335-43 ft., T.D. 3,346 ft.

Lario O. & G. 7 Mehl, WL NE SE 35-16-10w, swabbed 8 bbl. an hour, 750 gal. acid, Arbuckle 3,296-3,309 ft., T.D.

Lauck & Moncrief 6 Ehler, S½ S½ NW 35-16-10w, swabbed 45 bbl. an hour, Arbuckle 3,279-87 ft., T.D.

Ellis County

Bemis pool: Wentworth Drlg. 1 Richmond, C S½ SE SW 10-11-17w, dry, T.D. 3,425 ft., Lansing 3,080 ft., Sooy 3,370 ft., Simpson 3,406 ft., Arbuckle 3,418 ft.

Burnett pool: Phillips 6 Sitas, SW NW SW 12-11-18w, swabbed 60 bbl. in 1 hr., Arbuckle 3,351-57 ft., T.D., gravity 34.4.

Shell 3-A Riddler, SE NW NW 12-11-18w, swabbed 150 bbl. in 3 hr., Arbuckle 3,407-23 ft., T.D. 3,448 ft.

Wildcat: Wentworth 1 Richmond, SE SW 10-11-17w, dry, Arbuckle, 3,418-25 ft.

Kingman County

Cunningham pool: Skelly 1-G Miles, NW SE 30-27-10w, 53,500,000 cu. ft. gas, after acid from Viola, T.D. 4,040 ft.

McPherson County

Roxy pool: Westgate-Greenland 2 Zietlow, W½ SW NE 19-17-1w, pumped 710 bbl. in 8 hr., Mississippi lime 2,656-70 ft., T.D.

Phillips County

Ray pool: Cities Service 1-B Johnson, NE NE SW 32-5-20w, depthograph potential 2,013 bbl., La Motte sand 3,545-65 ft., T.D.

Pratt County

Cunningham pool: Skelly 1 Annetta, NW SE SE 1-28-11w, 42,000,000 cu. ft. gas, after acid from Viola, T.D. 4,229 ft.

Rice County

Chase pool: McPherson Drlg. 1 Cramm E, SW NW NE 15-19-9w, swabbed 36 bbl., Arbuckle, T.D. 3,232 ft.

Wildcat: Cities Service Gas 1 Hilt, C SE 15-19-8w, dry, T.D. 3,325 ft., base Kansas City 3,170 ft., Viola 3,272 ft., stains in Simpson 3,287 ft., Arbuckle 3,317 ft.

Bornholdt pool: Central Pet. 1 Snyder, C S½ NE SE 12-20-6w, pumped 184 bbl. in 8 hr., Mississippi lime 3,319-68 ft., T.D.

Orth pool: Bartlett et al 1 Bieberle, S½ SE SW 22 18-10w, pumped 56 bbl. in 8 hr., quartzite 3,160-63 ft., T.D. 3,223 ft.

Russell County

Coralena pool: Cities Service 1-D Rogg, C S½ SW NE

(Continued on Page 98)

New Wildcats Started in Five Eastern Texas Counties

By R. MARNE SANFORD

DALLAS, Tex., Nov. 25.—New wildcat tests were staked or reported the past week in Wood, Rains, Navarro, Hill and Leon counties to greatly advance the growing wildcat exploratory drilling program of the entire eastern Texas district.

In Wood County Bobby Manziel, the discoverer of the yet ungaged well just north of Hawkins, has staked his second operation for the area and the third for the sector. The operator located 1 Willie May Carter, centered of a 31.7-acre tract on the extreme east side of the Wideman Survey, near the corner of the Wideman, Willis, Parker, and George Brewer Surveys. The site is about ¾ mile northwest of the Hawkins townsite which was the location for the second test in the area and made about 2 weeks ago. The townsite test has not yet started drilling. Significant of the Hawkins area is the fact that no really commercial flow has yet been recorded by the indicated discovery well, however, trading continues unabated. Tracts as far as 3 and 4 miles from the discovery are changing hands for as much as $50 per acre.

Rains County Paluxy Test

Plains Production Co., Dallas, which recently quit a Woodbine sand failure in Wood County, is preparing to start a Paluxy sand test in Rains County. The Texas Co. was reported to have assigned a major part of its 6,700-acre block, known as the Alba block, to Plains Production Co. for the drilling of a test. No definite location has been made, however, plans are definite that the company will start the wildcat in the near future.

Navarro County Woodbine Test

The Cheneysboro area of Navarro County was to receive its second test by John R. Bunn. It will be the operator's 2 Cheney estate, staked 467 ft. from the north and east corner of a 74-acre tract in the J. White Survey, 12 miles southeast of the town of Corsicana. Last month Bunn drilled a failure at 1-A Cheney, same survey, which went to 3,238 ft. and showed some oil on a drill-stem test in the Woodbine sand from 3,195-99 ft. Bunn recently added about 400 acres to his block in the area, donated for the new test.

Hill County Shallow Test

In Hill County Rush & Saunders of Waco have obtained permit for their 1 J. H. Hutchison, located 709 ft. from the southeast and 1,085 ft. from the southwest lines of a 100-acre tract in the L. H. Williams Survey. It will be a shallow test, the contract depth not definitely determined.

Leon County New Wildcat

A 3,500-ft. wildcat for Leon County south of Buffalo is in prospect as tentative plans are being completed by Dan H. Merrell. The operator has a 3,500-acre block for which agreement has been made to pay $1 per acre upon completion. The acreage is in the Mary Hines and the Craddock surveys, however, location for the drill-site has not been made.

EAST TEXAS FIELD COMPLETIONS

(one-hour gages)

Gregg County

Longview area: Cities Service 26 Jeter, 44 bbl., tubing, 3,144-80 ft.
Coastal Dev. 7 Wood, 40 bbl., tubing, 3,514-18 ft.
Shell 38 Richey, 60 bbl., 3,128-63 ft.
Kilgore area: Potter Bros. 3 Bagwell-Laird, 26 bbl., tubing, 3,540-82 ft.

Upshur County

Longview area: W. D. Burnett 1 Cannon, dry, salt water, 3,642 ft.
Philbro Properties 4 Mathews, dry, salt water, 3,697 ft.
B. F. Phillips 6 McBride, 64 bbl., pumping, 3,714-50 ft.

Smith County

Joiner area: N. H. McMurrey 3-A Turner, 30 bbl., tubing, 3,778-79 ft.
N. H. McMurrey 38 Turner, 30 bbl., tubing, 3,802-04 ft.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Long Lake field outpost: Rogers Lacey 1 Abbott, Ewing Survey, 1 mile NE Long Lake field, top Pecan Gap 3,715-3,885 ft., top Austin 3,880-5,030 ft., top sand 5,466 ft., dry, total depth 5,474 ft.

Franklin County

Talco field: Talco Asphalt & Refg. 1 Rutherford, 717 bbl., pumping, 4,251-77 ft.
Texas 19 Barker, 99 bbl. in 18 hrs., pumping, 4,125-83 ft.

Freestone County

Long Lake field: Hunt 3 Dietz, 45 bbl., 5/64-in. choke, 5,259-63 ft.

Titus County

Talco field: Magnolia 4 Duke, 78 bbl., 6 hrs., pumping, 4,218-86 ft.

EASTERN TEXAS DRILLING REPORT

Anderson County

R. H. & W. Oil 1 Saunders, 17-acre tract in Joseph Ferguson Sur., in Frankston townsite, 5,000-ft. test, drilling 4,310 ft.
Tex-Harvey Oil 1 Cartmell, 63-acre tract in Blk. 4, E. Ewing Sur., 4 mi. E of Long Lake field, drilling 2,780 ft.

Fannin County

H. T. Fleming 1 Welch, E. J. Allen Sur., 4 mi. NW Honey Grove, reaming at 1,200 ft.
Damon Oil 1 A. L. Chaffin, SW cor. 85-acre tract, J. Ketcham Sur., 4 mi. NE Bonham, location cleared, prepare move in materials.

Freestone County

J. L. Collins 1 Utley, Claypool Sur., tested 5 bbl. oil then salt water broke in. S.D. 4,506 ft.

Henderson County

L. A. Demer 1 E. F. Bain, 104-acre tract in John Duncan Sur., 3½ mi. N of Bazzette, Woodbine test.

Hopkins County

L. A. Rankin 1 Chapman, Francis Hopkins Sur., preparing to deepen from 3,934 ft. to 6,000 ft., moving in rig.

Kaufman County

T. G. Shaw, trustee, 1 Agnes Wynne, B. S. Newman Sur., 8 mi. E of Kaufman, lower Trinity test, base Massive 6,255 ft., T.D. 6,454 ft., cleaning out to 5,000 ft., conditioning hole to resume drilling, cleaning out to 4,006 ft.

Lamar County

T. M. Parmly 1 C. H. Townsend, J. S. Porter Sur., 1½ mi. N of Chicolo, S.D. 1,550 ft.

Leon County

H. W. Hawker 1 C. H. Mills, M. Copeland Sur., 2½ mi. E of Normangee, S.D. 4,365 ft. (corrected depth).

Limestone County

Farrell Drlg. and Gulf Oil 1 F. Bevill, J. H. Murray Sur., 1 mi. SW of Horn, Travis Peak 4,892 ft., S.D. 4,937 ft., curing titles.

McLennan County

E. P. Campbell 1 Stewart, S. Burton Sur., 5 mi. N of Waco, S.D. 360 ft.

Red River County

J. F. Morrissey 1 Tyler, James Miro Sur., 3½ mi. SE of Bogota, 5,000-ft. test, S.D. 2,520 ft.

Wood County

Bobby Manziel 1 F. M. Morrison, James Pollock Sur., 4 mi. N of Hawkins, 10-in. at 100 ft., top Woodbine sand at 4,902 ft., saturated from 4,902-20 ft., well checks 300 ft. high, 5½-in. at 4,898 ft., 15 bbl. of 28-gravity oil recovered on initial tests, P.B. 4,894 ft. and drilled out to 4,908 ft., let stand 12 hr. and salt water rose 800 ft. in hole, drilled out to 4,925 ft. and made 85 per cent water and 15 per cent oil, water believed coming from upper part of pay level, still testing, T.D. 4,962 ft., P.B. 4,925 ft., prep. set liner to shut off water.

North Louisiana-Arkansas

(Continued from Page 72)

Lewisville—Lafayette County

East Texas Ref. Co. 1-M 3 E. P. Davis ..... SW NW NE 19-16-23
Pumping 26 bbl., 4 per cent salt water, T.D. 3,450 ft., 5½-in. casing 3,402 ft., porous lime 3,431 ft.

Wildcat—Nevada County

Coker & Grieves 1 B. Jones ..... NE SE 2-11-21
T.D. 1,300 ft., dry.

Wildcat—Saline County

Tedford Drlg. Co. et al 1 Cunningham SW NE 31-3s-15w
T.D. 331 ft., dry.

Urbana—Union County

Marine Oil Co. 8-B Thompson .... NE SE SW 3-18-13
46 bbl. heading 14/64-in. choke, T.P. 75 lb., C.P. 600 lb., T.D. 2,996 ft., 7-in. casing 2,985 ft.
McCreslen Oil Co. 4 A. Hadley ..... SE SE SW 3-18-13
72 bbl., 12/64-in. choke, T.P. 240 lb., C.P. 625 lb., T.D. 3,009 ft., 7-in. casing 3,005 ft.

ARKANSAS DRILLING REPORT

Clark County

Coker Oil Corp. 1 Guess ..... NE SE NE 2-11-20
T.D. 612 ft., would not pump, sanded up, cleaning out.
W. P. Wilson 1 Hamilton-Mathews .. NW SW 32-10-20
T.D. 1,572 ft., fishing baller.

Dallas County

H. H. McBride et al 1 Southern Kraft Corp. ..... SE SW 16-9-16
S.D. 1,463 ft.

Hempstead County

S. H. Cadenhead et al 1 J. J. Bruce .... SE SE 27-10-24
S.D. 206 ft.

Lonoke County

Lunnon, Howell & Ford 1 City of Cabot ..... Lot 1, Blk. 6, 18-4n-9w
Drilling 1,345 ft.

Prairie County

Hazen Oil Co. 1 Fidelity Mutual Life Ins. Co. ..... NE SW 16-2n-6w
Drilling 340 ft.

Saline County

Tedford Drlg. Co. 1 Williams 31-3s-15w
Set 6-in. casing 294 ft., 4½-in. casing 500 ft., T.D. 550 ft.

St. Francis County

U. S. Oil Corp. 1 Wilford ..... NE SE NE 29-4n-1w
S.D. 930 ft.

EAST TEXAS BORDER DRILLING REPORT

Bowie County

Lee Timberlake et al 1 Smith, T. H. Hill Sur., repairing rig, 2,990 ft.

Shelby County

Paul Pewitt 1 J. S. Swan, Ann Gray Sur., T.D. 5,105 ft., S.D.
Superior Oil Co. 4 Pickering Lumber Co., W. J. Crane Sur., old well worked over, old T.D. 2,610 ft., reset 9⅝-in. casing 280 ft.

EAST TEXAS BORDER FIRST REPORTS

Wildcat—Marion County

J. D. Parsons 1 John Jackson, Alexander Albright Sur.

Carthage—Panola County

Turner & Smith 2 Panola Dev. Co., Gillespie Sur.

Estimated Daily Production

Estimated daily gross production for week ended November 22:

NORTH LOUISIANA

	Barrels
Bellevue	505
Caddo light	5,740
Caddo heavy	2,210
Converse	500
Cotton Valley	*13,250
Cross Lake	3,210
De Soto and Red River	1,010
Elm Grove	340
Haynesville	2,650
Holly	90
Homer	2,800
Lisbon	3,090
Nebo	325
Olla	7,000
Pleasant Hill	85
Rodessa	16,925
Sarepta-Carterville	†260
Sligo	2,275
Sugar Creek	550
Urania	2,360
Zwolle	1,425
Total	66,600
Rodessa (Texas)	12,685

SOUTH ARKANSAS

Atlanta	2,450
Big Creek	110
Buckner	2,200
Champagnolle	1,150
Dorcheat	1,125
El Dorado	1,630
Fouke	250
Lewisville	525
Lisbon	215
Magnolia	19,600
McKamie	425
Miller County	270
Nevada	570
Nick Springs	860
Rodessa	1,725
Schuler	16,950
Smackover light	1,605
Smackover heavy	13,500
Stephens	550
Troy	1,165
Urbana	1,740
Village	1,150
Total	69,765

*3,600 bbl. is distillate. †40 bbl. is distillate.

Texas Gulf Coast

(Continued from Page 79)

Harris County

Christian-Carpenter Drilling Co. 1-A Backen, Ogburn field, coring shale 6,025 ft.

Jefferson County

Sun 8 Broussard & Hebert, La Belle field, drilling shale 3,615 ft.

Matagorda County

Ohio 1 Blackburn, Sugar Valley prospect, coring shale 9,080 ft.
Ohio 3 Carlson, North Markham field, drilling shale 3,650 ft.

Wharton County

Texas 1 Wyer, W. F. Dobbins Sur., 5 mi. N of Louise, derrick, first report.

By

L. P. STOCKMAN

Delano and Rio Bravo Fields Are Extended by Tests

LOS ANGELES, Calif., Nov. 25.—Kettleman Hills operators held another meeting this week in an effort to work out an equitable plan of regulation for the Eocene in that field but very little of tangible nature was accomplished. Operators have been working on this problem for several months but there is still no unanimity of opinion with respect to the best method to be put into operation. Maximum effectiveness of the plan adopted last March had not been achieved due to differences of opinion and because of operating conditions but some good has been accomplished. Kenda in its plan contemplated limiting Eocene production to 5,000,000 cu. ft. of gas to each 160 acres but those conforming with the plan have been unable to restrict production to this amount. The group has conformed as closely as possible with production of Superior Oil Co. and thus this company has set the rate of production for the field as far as the Eocene is concerned. If Superior Oil Co. could find it possible to limit Eocene gas production to 5,000,000 cu. ft. per day the plan would reach maximum effectiveness.

Eocene wells in the Kettleman North Dome field show an unusually high gas-oil ratio and it is because of the necessity of curtailing or regulating gas production that so much stress has been placed on each proposal. These Eocene wells will many times produce 10,000,000 cu. ft. of gas daily and only a few hundred barrels of crude oil so that in the final analysis oil production is of minor consequence as gas production is the dominating factor. Obviously if Eocene gas production is reduced oil production will likewise be affected.

Current daily production of leading California fields for the past week follows:

	Barrels
Wilmington	82,125
Long Beach	42,250
Midway-Sunset	41,750
Kettleman North Dome	39,750
Ventura Avenue	33,750
Coalinga	29,500
Huntington Beach	26,750
Santa Fe Springs	25,475
Dominguez	20,850
Santa Maria Valley	20,250
Montebello	16,750

Delano Gas Field

Union Oil Co. extended the productive limits of the Delano (Trico) gas field approximately 1 mile to the west this week by finishing 1 Seymour flowing 7,000,000 cu. ft. of dry gas from 2,461 ft. This well is located in 20-24s-23e, 1 mile west of well No. 2 of Trico Oil & Gas Co. in 21-24s-23e and a little over 6,250 ft. northwest of well No. 1 of Trico Oil & Gas Co. in 29-24s-23e. The intervening acreage is held by Trico Oil & Gas Co. It remains to be seen whether Union 1 Seymour, which is located on fee-owned acreage, shows sustained gas production or goes to water in the near future. It is quite likely that Trico Oil & Gas Co. will wait developments before undertaking additional drilling. Tide Water Associated Oil Co. holds deep-zone rights on the acreage of Trico Oil & Gas Co. in this field but this is of questionable value as the former recently drilled and abandoned a deep test. Union Oil Co. has also drilled a deep dry hole in this area. No. 1 Seymour was drilled from spud to completion in a total elapsed drilling time of 7 days and consequently drilling costs were relatively low. It is believed quite likely that the final status of this well will be determined within the next few days.

Development of gas fields has started again in the north central part of the state after a suspension of several months and there has been an increase in exploration work in areas containing gas fields. Standard Oil Co. has staked location for a new wildcat to be drilled about 12 miles southeast of the Tracy gas field in San Joaquin County and material is expected to be placed on ground within the next few days. Standard's new wildcat which will be drilled in search of a commercial gas accumulation is 1 Blewett Community in 25-3s-6e. Up in Solano County, Richfield Oil Corp. has location staked 900 ft. north and 1,200 west from center 10-4n-1w for 3 Potrero Hills. Richfield's first wildcat on the Potrero Hills structure is bottomed at 4,500 ft. and showed gas production possibilities. No. 3 Potrero Hills is expected to confirm the showings found in well No. 1 in which case the company will have proved up a new gas field. In Yolo County, Standard Oil Co. is coring ahead in 1 Tippetts Two in 9-12n-3w but is not yet deep enough to pick up the anticipated pay.

Rio Bravo

Union Oil Co. has found the pay in 72 Crites in the northern end of the Rio Bravo field of Kern County and will extend the productive limits of the field if the well shows commercial production. No. 72 Crites which is located southeast of Superior 1 Riggs, a dry hole, topped the Rio Bravo oil sand at 11,243 ft. and was still in oil sand late in the week at 11,356 ft. The importance of this well lies in the fact that it may give Union Oil Co. three or four additional locations on the Crites lease. Union's field department estimates a probability of two wells with a possibility of several more along the south and east line of the Crites lease. No. 1 Riggs definitely limits the field to the northwest and consequently Union will undoubtedly go very slow with drilling operations in this region. In contrast with the northwest limits, there have been no dry holes drilled in the west central part of the field and consequently the Rio Bravo field may prove wider than it appears at present. It is interesting to note that the present proved limits of the field in the southern end are only about 2 miles away from a wildcat that Union Oil Co. drilled a number of years ago and subsequently abandoned as a duster. This early well would have made no difference if it had the center of the Rio Bravo structure because it was not carried deep enough to have found the pay. The 11,000-ft. drilling depth had not been reached at that time.

SAN JOAQUIN VALLEY COMPLETIONS

Cantua District

Texas 1 Everding 24-17s-15e
Abandoned 10,318 ft. in hard tight gray sand and shale of Domengine. Upper Variegated 6,215 ft., Kreyenhagen 7,908 ft., base Kreyenhagen 8,831 ft. Fresno County.

Coles Levee Field

Richfield 27-4-B Kern County Land 4-31s-25e
Flowed 322 bbl., 53.2-gravity, 3 per cent cut, 5,000,000 cu. ft. gas. Two 1½-in. beans. Pressure 250/800 lb. Elev. 305 ft. T.D. 9,333 ft. 8⅝-in. water string cemented 8,345 ft. 1,016 ft. 6⅝-in. liner landed 9,328 ft. Perf. open to production 8,440-8,695 ft., 8,735-8,885 ft., 8,925-9,140 ft., 9,180-9,327 ft. 9,288 ft. 2½-in. tubing. Completed in Stevens oil sand. N point 8,174 ft. Bottomed in sand. 58 days total elapsed drilling time. Kern County.

Fruitvale Field

L. W. Harrison 1 Knowles 23-29s-27e
Pumped 42 bbl., 19.3-gravity, 20 per cent. Elev. 408 ft. T.D. 3,772 ft., P.B. 3,726 ft. 6⅝-in. water string cemented 3,520 ft. 612 ft. 5-in. liner landed 3,766 ft. and cemented through perf. 3,611 ft.; second liner 561 ft. of 3-in. landed 3,726 ft. and carrying 100-mesh perf. 3,696-3,726 ft. Perf. open to production 3,675-3,726 ft. 3,151 ft. 2-in. tubing. This well was deepened from 3,732 ft. to 3,772 ft. and plugged back to 3,726 ft. Kern County.

Paloma Field

West. Gulf-Texas 34-2 Kern County Land ... 2-32s-26e
Flowed 960 bbl., 54-gravity, 0.1 per cent cut, 6,550,000 cu. ft. gas. 24/64-in. bean. Pressures with 18/64-in. bean 2,950/2,550 lb. Elev. 300 ft. T.D. 10,722 ft. 7-in. water string cemented 10,282 ft. 488 ft. 4½- liner landed 10,718 ft. 80-mesh perf. open to production 10,410-10,710 ft., 100-mesh perf. 10,710-15 ft. 10,254 ft. 2-in. tubing. Located in eastern part of field. Top gas sand 10,311 ft., top oil sand 10,408 ft. 128 days total elapsed drilling time. Kern County.

Southeast Coalinga Field

Superior 5-B Cagle 6-20s-16e
Flowed 1,440 bbl., 31.1-gravity, 0.6 per cent cut, 936,000 cu. ft. gas. 31/64-in. bean. Pressures 1,200/1,280 lb. Elev. 695 ft. T.D. 7,640 ft. 8⅝-in. water string cemented 7,127 ft. 532 ft. 6⅝-in. liner landed 7,840 ft. 120-mesh perf. open to production 7,128-7,640 ft. 7,362 ft. 2½-in. tubing. Top Kreyenhagen 5,906 ft. top green sand 7,052 ft., top productive Gatchell oil sand 7,127 ft., base Gatchell oil sand 7,619 ft. Bottomed in silt. 34 days total elapsed drilling time. Fresno County.

Tupman Field

Richfield 12-32-A Kern County Land 32-30s-25e
Flowed 1,712 bbl., 33.6-gravity, 5 per cent cut, 1,300,000 cu. ft. gas. Two 1½-in. beans. Pressures 800/1,600 lb. Elev. 309 ft. T.D. 9,055 ft. in Stevens. 8⅝-in. water string cemented 8,492 ft. 604 ft. 6⅝-in. liner landed 9,055 ft. and cemented through perf. 8,691 ft. Perf. open to production 8,695-8,850 ft., 8,890-9,045 ft. 9,019 ft. 2½-in. tubing. 66 days total elapsed drilling time. Kern County.

SAN JOAQUIN VALLEY OUTPOSTS

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
Drilling 1,288 ft. in sandy shale. Kern County.

Elk Hills Field

Standard 42-31-S 31-30s-24e
Derrick up. Scheduled for immediate drilling. Located east end of Elk Hills anticline. Kern County.

Kettleman North Dome Field

Standard 344-13-H fee 13-21s-16e
Drilling hard sand and shale 10,720 ft. Fresno County.
Standard 1-1-U fee 1-23s-16e
Drilling hard shale 9,293 ft. Kings County.

Midway-Sunset Field

No. Amer. Oil Consd. 1-28-W.P. 28-32s-23e
T.D. 351 ft. 13⅜-in. surface pipe cemented 341 ft. with 210 sacks cement.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
Drilling sandy shale 6,985 ft. Kern County.

Rio Bravo Field

Union 72-28 Crites 28-28s-25e
Drilling sandy shale 11,190 ft. Kern County.

Round Mountain Field

Spartan Drlg. Co. 1 Hiatt 32-28s-29e
T.D. 2,089 ft. Sidetracked fish to 2,084 ft. Now coring ahead.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
Drilling 10,360 ft. in hard sand and shale. Kern County.

Wasco Field

Pacific Western 1 Meyer 7-27s-24e
T.D. 13,150 ft. Bridge 11,105 ft. Now redrilling 12,751 ft. Kern County.

Wheeler Ridge

Richfield 2 Kern County Land 28-11n-20w
Drilling 10,791 ft. in sand and shale. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Panoche District

Jergins Trust 2 Cheney 29-14s-13e
Derrick up. Moving in drilling equipment. Joint test by Jergins Trust, Superior Oil Co. and Associated Oil Co. Jergins Trust will do actual drilling. First well suspended at 9,225 ft. after failure to show production from oil sand. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
Drilling 10,130 ft. in hard tight gray shale with streaks of sand and silt, giving no cuts. Kern County.

Potrero Hills District

Richfield 3 Potrero 10-4n-1w
Location staked for early work. First well indicated possible existence of substantial accumulation of dry gas. No. 1 Potrero was bottomed at 4,500 ft. Solano County.

Pyramid Hills District

Associated 31 West Slope 20-24s-18e
Drilling 1,970 ft. in Cretaceous shale. Top Cretaceous 1,909 ft. Minor showings in Domengine 1,840-1,900 ft. Log shows fair oil sand 1,103-88 ft. and gray sand 1,188-1,215 ft. Kings County.

Rio Bravo District

Wilshire 1 Campen 1-29s-25e
Drilling 8,080 ft. in sandy shale. Kern County.

Sacramento District

Ind. Expl. Co. 1 Unit Plan 19-7n-6e
Rigging up rotary. Sacramento County.

Tejon District

Richfield 1 Tejon Ranch 2-10s-19e
Drilling 8,463 ft. in gray sand and shale. Kern County.

Union Avenue District

Hancock 1 Roberts 6-30s-28e
Drilling 284 ft. Kern County.

Tracy District

Standard 1 Blewett 25-3s-6e
Location. Elev. 62 ft. San Joaquin County.

Trico District

Union 1 Seymour 20-24s-23e
Drilling 2,461 ft. in sand and shale. 10¾-in. water string cemented 413 ft. 6⅝-in. casing cemented 2,387 ft. Gas sand 2,412-22 ft. Elev. 211 ft. Flowing 7,000,000 cu. ft. of dry gas per day on flow test. This well located 1 mile west of nearest production. Tulare County.

LOS ANGELES BASIN

The deep-zone exploitation program getting under way in the Inglewood field of Los Angeles County did

not show any change during the week although all three of the wells drilling ahead made additional footage. Standard Oil Co., however, completed rigging up 1-85 Los Angeles Investment and consequently should be spudded in within the next few days. Other operators holding acreage in the Inglewood field are still sitting tight but must proceed with drilling as soon as wells are completed within 300 ft. of property lines in accordance with lease provisions. It is quite obvious, however, that other operators in the field in addition to Standard Oil Co. and Kettleman & Inglewood Corp. will not wait until wells are finished on adjoining leases. This means that probably within 30 days there will be at least 10 wells drilling to the lower zone in the Inglewood field if present drilling is continued. No valid reason has been advanced for the starting of deep-zone development in the Inglewood field at this time except that some of the companies holding leases in that district want additional production. The offset well being drilled on the Los Angeles Investment lease by Standard Oil Co. is undoubtedly due to lease requirements but there is little justification for the starting of wells in other parts of the structure at the present time because if the offset to 1 Sentous proves to be a very small well it might not be necessary to proceed with additional drilling.

Montebello

The Montebello extension has reached the point where there are only two redrilling jobs under way. It has been several months since any new drilling has been undertaken in this field and there is no reason to expect any further work in the near future. When deep drilling gets under way, operators will utilize present productive wells as this will reduce drilling costs. Development work to date has proved a costly undertaking and most wells will never pay out drilling costs. A few operators including Kern Oil Co., Union Oil Co., Standard Oil Co. and a few others will show a favorable return due to conservative drilling, normal well spacing and freedom from competitive drilling. It is logical to assume that deeper drilling will get under way at some time in the future but this is not expected to be done as long as present conditions exist. The Montebello extension is producing about 80,000,000 cu. ft. of gas per day at present and the field is still operating under provisions of a court injunction which limits production and prohibits gas blow or waste.

There is no structural condition preventing additional accumulations below present production and thus there is every reason to believe that deeper drilling will yield satisfactory results. Discovery of a deeper zone would result in a repetition of conditions that have prevailed in all upper zones with the result that it would be questionable whether the venture would produce any profits. Then too some of the operators holding present productive leases are financially embarrassed due to development of upper zones and are unable to proceed with additional work. There is little likelihood that leases in the town-lot area can be consolidated due to conflicting interests and thus if a new deep zone is ultimately found operators will be obliged to undertake additional work on town lots. Rather than do this it is quite likely that some operators will abandon existing wells and quitclaim leases.

NATIONAL CARBON GRAPHITE KARBATE PRODUCTS

TRADE-MARK TRADE-MARK

Reduce Losses

FROM CORROSION, THERMAL SHOCK AND CONTAMINATION OF PRODUCT

● Carbon, Graphite and "Karbate" products are highly resistant to the action of most acids, alkalies and other corrosive materials. They possess good mechanical strength and exceptional resistance to thermal shock.

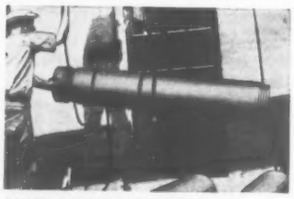
"Karbate" is a brand of material, of carbon or graphite base, which is impervious to the seepage of fluids under pressure. Graphite and "Karbate" No. 2 have high thermal conductivity and excellent heat transfer properties.

CONSTRUCTION MATERIALS — Carbon and Graphite construction materials are available in a variety of forms including brick, flat tile, blocks, beams, tubes and other structural shapes. These products are used for the construction or lining of many types of processing equipment because of their high resistance to corrosion and to the destructive effects of severe thermal shock. Graphite construction materials are used where high thermal conductivity is needed.

TOWER SECTIONS — Cylindrical carbon tower sections, machined with close fitting tongue and groove joints, can be supplied in sizes up to 33 inches I.D. by 36 inches long. These sections, stacked vertically, provide an economical tower construction for processing corrosive materials.

RASCHIG RINGS — Carbon Raschig rings have high resistance to the destructive action of such materials as acids, sulphides and hot alkaline solutions. They provide an ideal tower packing for sweetening gas and petroleum products with caustic soda or other alkalies. Low weight per unit of volume, good mechanical strength and high resistance to thermal shock reduce cost of tower construction and maintenance.

PIPE, VALVES and FITTINGS — Carbon, Graphite and "Karbate" pipe and fittings are available in sizes from ½ inch to 6 inches I.D. Saunders type valves of "Karbate" construction can also be supplied. These corrosion resistant products are used for the construction of heating coils — both steam and gas-flame types, condensers, drain lines and other types of conveying, circulating and heat exchange equipment. Carbon or "Karbate" No. 1 is recommended where high heat transfer properties are not desired. Graphite and "Karbate" No. 2 have heat transfer properties equal to steel pipe of corresponding diameter. Carbon and Graphite pipe and fittings are sufficiently impervious to convey fluids at low pressure without disturbing seepage. At higher pressures, or where all seepage must be prevented, "Karbate" materials are recommended.



ELECTROSTATIC PRECIPITATORS — The use of carbon tubes and supporting collars in electrostatic precipitator construction for the precipitation of corrosive materials eliminates expensive replacements. Carbon is also used on some installations for the construction of the precipitator tower and tube supporting beams.

GROUND ANODES — Carbon and Graphite ground anodes provide durable and economical ground connections for the cathodic protection of metallic structures, tanks and pipe lines against electrolytic corrosion from adverse soil or water conditions. Graphite anodes have proved especially advantageous in the presence of salt water.

Write FOR COMPLETE INFORMATION ON THE PRODUCTS IN WHICH YOU ARE INTERESTED

NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
UCC
CARBON SALES DIVISION, CLEVELAND, OHIO
General Offices: 30 East 42nd Street, New York, N. Y.

BRANCH SALES OFFICES
NEW YORK • PITTSBURGH
CHICAGO • ST. LOUIS
SAN FRANCISCO

LOS ANGELES BASIN COMPLETIONS

Huntington Beach Field

Signal O. & G. 24-A Bolsa 34-5s-11w
Flowed 610 bbl., 26.7-gravity, 2.5 per cent cut, 2,625,000 cu. ft. gas, 38/64-in. bean. Pressures 390/640 lb. Elev. 15 ft. T.D. 4,855 ft. 8⅝-in. water string cemented 3,975 ft. and cemented through perf. 1,015 ft. 900 ft. 5⅝-in. liner landed 4,855 ft. Perf. open to production 3,975-4,855 ft. 4,521 ft. 2½-in. tubing. 33 days total elapsed drilling time. Orange County.

Rosecrans Field

St. Anthony 6 Gordon 14-3s-13w
Flowed 825 bbl., 32.8-gravity, 2 per cent cut, 1,810,000 cu. ft. gas. 48/64-in. bean. Pressures 300/750 lb. Elev. 90 ft. T.D. 7,882 ft., P.B. 7,820 in. in O'Dea zone. 7-in. water string cemented 7,536 ft. 345 ft. 5-in. liner landed 7,819 ft. Perf. open to production 7,501-7,819 ft. 7,800 ft. 2½-in. tubing. Located west side of field. 35 days total elapsed drilling time. Los Angeles County.

Wilmington Field

Martin-Miller Oil Co. 1 Huck 32-4s-13w
Flowed 297 bbl., 14.9-gravity, 15 per cent cut, 75,000 cut. ft. gas, 25/64-in. bean. Pressures 75/125 lb. Elev. 43 ft. T.D. 3,712 ft. in Ranger zone. 8⅝-in. water string cemented 3,020 ft. 724 ft. 7-in. liner landed 3,711 ft. Perf. open to production 3,020-3,315 ft., 3,500-3,711 ft. 3,694 ft. 2½-in. tubing with packer 2,953 ft. 14 days total elapsed drilling time. Los Angeles County.

A. D. Mitchell 1 Combate 32-4s-13w
Pumped 195 bbl., 14.2-gravity, 1 per cent cut. Elev. 42 ft. T.D. 3,650 ft. in Ranger zone. 9-in. water string cemented 2,700 ft. 992 ft. 5¾-in. gravel-packed liner landed 3,640 ft. Perf. open to production 2,695-2,900 ft., 2,950-3,055 ft., 3,095-3,195 ft., 3,395-3,640 ft. Second oil string 3,632 ft. of 2-in. tubing with packer 2,912 ft. 2,530 ft. 2-in. tubing. 23 days total elapsed drilling time. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS

Dominguez Field

Union 79 Callender 32-3s-13w
Drilling 9,468 ft. Los Angeles County.

Long Beach Field

Union 19 L.B.C. 30-4s-12w
Drilling sand and shale 5,894 ft. Los Angeles County.

LOS ANGELES BASIN WILDCATS

Dominguez-Gardena District

Wood-Mellon 1 Wood 31-3s-13w
T.D. 7,795 ft., P.B. 2,400 ft., drilled to seventh Callender zone at 6,975 ft., cemented 5½-in. casing 6,975 ft., gun perf. 6,752-860 ft., swabbed water, squeezed perf., building rig for second well. Los Angeles County.

Inglewood District

Standard 3-1 L.A.I. 17-2s-14w
Drilling 6,459 ft., in hard sandy shale. Los Angeles County.

Malibu District

Sovereign Oil Co. 1 Malibu 7-2s-18w
S.D. 3,466 ft. in very hard conglomerate with tight gray sand and streaks of shale. Los Angeles County.

Pico District

Cal-Pico 1 Pico 7-2s-11w
Drilling in sand and shale, 7,599 ft. Los Angeles County.

Whittier District

Fullerton 6 Whittier 25-2s-11w
Drilling in sandy shale, 5,477 ft. Los Angeles County.

COASTAL DISTRICT

Texas Co. has staked location for 1 Montgomery in 13-2n-22w in the Oxnard district of Ventura County and early work is anticipated. This wildcat will be located 1,600 ft. southeasterly along northeasterly property line from the northerly property corner thence 335 ft. southwesterly at right angles. This location is about 1 mile northwest of 1 Edwards of Texas Co. which was drilled to 6,111 ft. and abandoned as unproductive April 11, 1938. The Edwards wildcat had showings of oil and gas in the Miocene and on a formation test from 5,793-5,845 ft. to open 30 minutes flowed 1,000,000 cu. ft. of gas and recovered 200 ft. of mud showing spots of oil. Top of the Miocene was placed

in this well at 5,190 ft. and although it failed to produce commercially it showed favorable indications that could not be completely ignored. The new test has considerable merit and has the benefit of logs from several wells drilled in that general neighborhood.

Bolsa Chica Oil Co. has abandoned work on its tideland wildcat in the Coal Oil district of Santa Barbara County when a faulted condition was encountered. A complete check will be made of this well's log along with those of other wells drilled at the same location to determine future possibilities. This is the fourth hole drilled from the company's wharf that extends out into the Pacific Ocean and while some favorable indications have been logged from time to time no production has been developed. This tideland structure was first recognized a number of years ago by the late Irving Augur, former president of Bolsa Chica Oil Co., and previously a member of the California Mining Bureau. Just what effect the faulted condition in the subsurface formations may have on this structure only the future can tell but it could prove to be the dominating factor as far as the possible accumulation is concerned.

Santa Maria Field

Union Oil Co. has greatly increased its drilling program in the Santa Maria Valley field and will probably enlarge its program still further provided the recently acquired acreage proves highly productive. Come of the wells now under way or scheduled to begin drilling soon are on properties acquired from E. H. Moore, Inc., and Ohio Oil Co. Union is constructing new cooking units at its Oleum refinery in the San Francisco Bay region and early in the new year will be able to treat this Santa Maria Valley crude to advantage. For several years there has only been a limited market for this crude oil due to its sulfur content and very heavy bottoms. The gasoline content is favorable but the residuum has heretofore proved to be an undesirable product. There is a total of about 500,000 bbl. of this heavy residue in sumps in the Santa Maria district where it has been dumped by refiners in order to get rid of it.

In the Ventura Avenue field the Lloyd Corp., headed by Ralph Lloyd, largest land owner in the Ventura Avenue field, has resumed drilling operations in 5 Lloyd in the extreme eastern end of the structure and the bit in this deep well recently passed 10,360 ft. This well was hung up for several months with mechanical trouble but is once again making hole and should reach its final depth in the near future. No. 6 Lloyd is being delayed with a fishing job due to a twist off of drill pipe at 8,630 ft. but an early recovery is expected. Top of the drill pipe fish is at 7,050 ft. or 180 ft. below the shoe of the 8⅝-in. casing cemented at 6,870 ft. Derrick for 7 Lloyd is in course of construction but this well will not be spudded until after completion of present work.

COASTAL DISTRICT COMPLETIONS

San Miguelito Field

Continental 19 Grubb 23-3n-24w
Flowed 1,920 bbl., 30.1-gravity, 5 per cent cut, 1,500,000 cu. ft. gas, 1¼-in. and ¾-in. tubing beans and ¾-in. casing bean, pressure 150/250 lb., elevation 348 ft., T.D. 6,950 ft., 7-in. water string cemented 6,218 ft., 782 ft. combination 5½-in. liner landed 6,949 ft., perf. open to production 6,200-6,949 ft., 6,664 ft. 2½-in. tubing, completed in San Miguelito zone, 52 days total elapsed drilling time. Ventura County.

Tar Springs District

Superior 1 Tar Springs 24-32s-14e
T.D. 6,512 ft., abandoned in hard shale, no showings recorded to date. Had heavy tar sand high up in hole. San Luis Obispo County.

(Continued on Page 92)

West Central Texas

(Continued from Page 76)

for the relatively new field and there are two tests drilling and one standing location.

Throckmorton County

A new deep exploratory wildcat will start in Throckmorton County within about 2 weeks, the location having been staked the past week. It is to be Homer Moore and J. E. Dobson 1 J. O. Crump, Block 956, T.E.L. Survey. The location is about ¼ mile west of a failure by Red Bank Oil Co. some 3 years ago which was credited with several shows of oil before entering water and being abandoned.

WEST CENTRAL TEXAS DRILLING REPORT

Callahan County

Rhodes Drilling Co. 1 N. M. George, NW Sec. 75, O.A.L. Sur., 4 mi. E Baird, 2,700-ft. test, small show oil 2,139-47 ft., tested dry, drilling deeper at 2,250 ft.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur., drilling 725 ft., last report.
Natural Resources 1 Armor, Sec. 105, T.&N.O. Sur., 5 mi. NE of Eden, prepare to resume drilling at 1,565 ft., contract depth 3,250 ft., to Ellenburger lime, C.O. to old T.D., prepare resume drilling.

Concho County

Floyd C. Dodson 1 Robt. Wilson, Thomas Green Sur., 10 mi. SW Eden, oil show from 3,756-59 ft. failed to produce, drilling deeper at unreported depth.

Fisher County

F. A. Stephenson 1 Maberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, set casing, drilled plug, 800 ft. oil in hole, 5½-in. at 3,271 ft., swabbing and flowing by heads 3,202 ft., S.D. 3,312 ft.
General Crude Oil 12 Flanigan, center of old Royston field, Ordovician test, drilling 4,945 ft.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur., rigging up to drill deeper below 3,010 ft.
C. J. Meyers 1 Oats, 420 ft. from S and 1,035 ft. from E lines, F. Hughes Sur., 4,000-ft. test, casing set at 3,400 ft., preparing drill ahead.

Menard County

Harry Baldwin I Leggett, SW SW Sec. 1, B.S.&F. Sur., drilling 700 ft.

Jones County

Pearson 1 Carlson, SE W½ N½ Sec. 1, Blk. 5, H.&T.C. Sur., Palo Pinto test, surface casing set, prepare drill ahead.
Danciger Oil & Ref. 1 Nelson, SW cor. Lot 82, De Witt Co. Sch. Lds. Sur. 126, prepare spud.

Nolan County

Arthur Harvey I L. N. McRee, SW NE Sec. 43, Blk. 19, T.&P. Sur., 5,200-ft. test, spudding.

San Saba County

Three Widows Oil 1 Ballard, NW cor. S½ Sec. 80, H. Behrenroth Sur. 506, 2,000-ft. test, fishing 1,390 ft.

Shackelford County

Carson 1 Elliott, Sec. 49, B.A.L. Sur., resumed drilling after being S.D. at 1,685 ft., Caddo lime test to 3,620 ft., saturation in Caddo lime 3,614-40 ft., treated 100 gal. acid, swabbing est. 50 bbl. per day, re-treated, testing.
Georgian Oil Corp. 2 Black, 1,290 ft. from SE and 540 ft. from SW lines Sec. 301, T.E.&L. Sur., deep test, location.

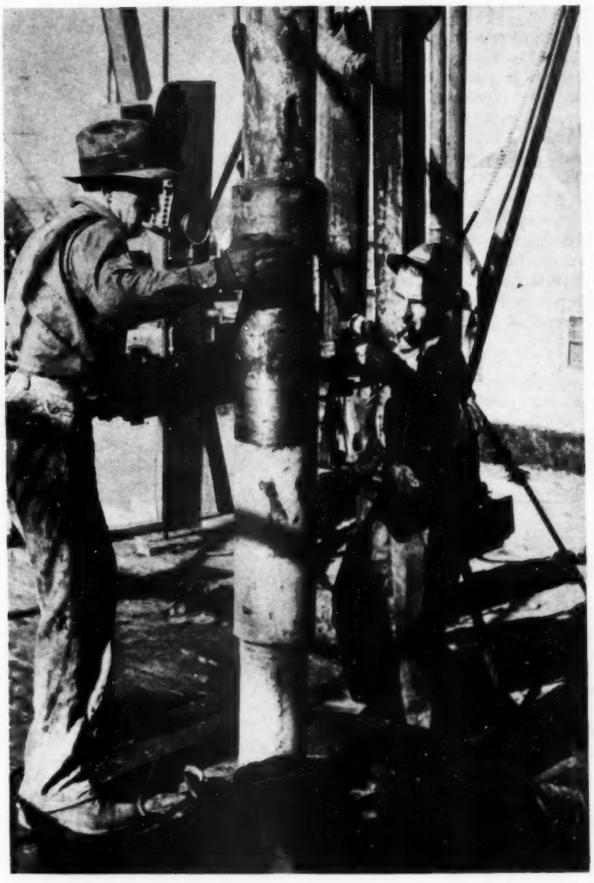
Taylor County

Ce-beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, corrected report, drill pipe stuck, T.D. 1,940 ft., S.D.

Throckmorton County

Humble 1 Durham, Sec. 1627, T.E.&L. Sur., 10-in. at 690 ft., drilling 4,235 ft.

TOOL PUSHER SOLVES PROBLEM OF WHIPPED-OFF SURFACE CASING —USES PATTERSON-BALLAGH PROTECTORS



One of the busiest contractors in Louisiana and Arkansas reports: "During a 2½-year period, with five rigs running, in which we completed 27 wells, we used Patterson-Ballagh Stabilizers and Protectors. During that time we did not have a single case of whipped-off surface casing. This was a common cause of trouble in other wells drilling in our immediate neighborhood where no Protectors were used in the surface pipe. Drilling was much smoother and faster with the Protectors. They saved us plenty of money and prevented plenty of trouble."

AVOID TROUBLE—USE
PATTERSON-BALLAGH PROTECTORS
PATTERSON-BALLAGH CORPORATION—Los Angeles—Houston—New York City

By
F. L. SINGLETON

Discovery in Willacy Opens Large Area for Prospecting

CORPUS CHRISTI, Tex., Nov. 25.—The search for commercial production in Willacy County located in the salt-dome section of the Rio Grande Valley area, ended the past week with the opening of a new oil field 6 miles southeast of Willamar in the eastern part of the county. The field was opened with the completion of Pan American and Shell 1 Garcia, completed for an initial production of 263 bbl. of 30-gravity oil per day through a ¼-in. choke. Tubing pressure was 300 lb. Drilled to a total depth of 9,004 ft., production was obtained by perforating casing in the Frio section at 7,668-78 ft., 7,644-50 ft. and 7,620-34 ft.

The discovery is located in Share 13, San Juan de Carrecitas grant on a farmout lease from Shell Oil Co. Inc. It is southeast of the La Sal Vieja area where Shell 1 Yturria Land & Cattle Co. showed promise of production in 1936. The well flowed gas and distillate from the Frio sand approximately 7,600 ft. but production soon declined and the well was later abandoned.

Willacy County, like Cameron, Kennedy and Kleberg counties, offers a vast amount of virgin territory for development and this completion places this territory in the limelight. The area has been under lease for several years, and a large amount of geophysical work is reported to have uncovered several interesting structures.

Aransas Bay Prospect

Gulfboard 1 State, offshore from Aransas County on the Mud Island prospect in Aransas Bay, is again in the limelight as preparations are being made for another production test. The well is bottomed at 9,257 ft., and 5½-in. casing was cemented on bottom preparatory to testing additional shows which have been logged at intervals from 8,554 ft. to the present depth. Seven-inch casing was recently cemented at 8,554 ft. and the well tested salt water and a small amount of oil. While details of the showings logged below 8,500 ft. were not available, the well is reported to have drilled sand at 9,111-22 ft. and the well tried to blow out at a total depth of 9,124 ft. When the blowout preventer was closed working pressure built up to 3,325 lb.

Oil production was opened in the Weser gas field, Goliad County, as W. R. Davis, Inc., 1-B Albrecht, flowed 97 bbl. per day through a 4/32-in. choke with tubing pressure 350 lb., and casing pressure 950 lb. Gravity of the oil tested 43°. The well was drilled to a total depth of 5,381 ft., and was completed through perforated casing in the Cook Mountain formation at 5,246-52 ft. The company controls a block of several thousand acres in the area and a steady development is planned.

Nueces County Activity

In Nueces County, and located 1 mile east of the Luby field, Seaboard 1 J. O. Chapman showed promise of distillate production in the 4,000-ft. sand, but apparently has missed the 5,500-ft. sand. Gas sand was cored at 4,025-30 ft. and a 4½-minute drill-stem test tested 550 lb. working pressure and recovered 5 ft. of straw-colored distillate. The well is drilling in shale below 5,950 ft. after coring salt-water sand at 5,659-68 ft.

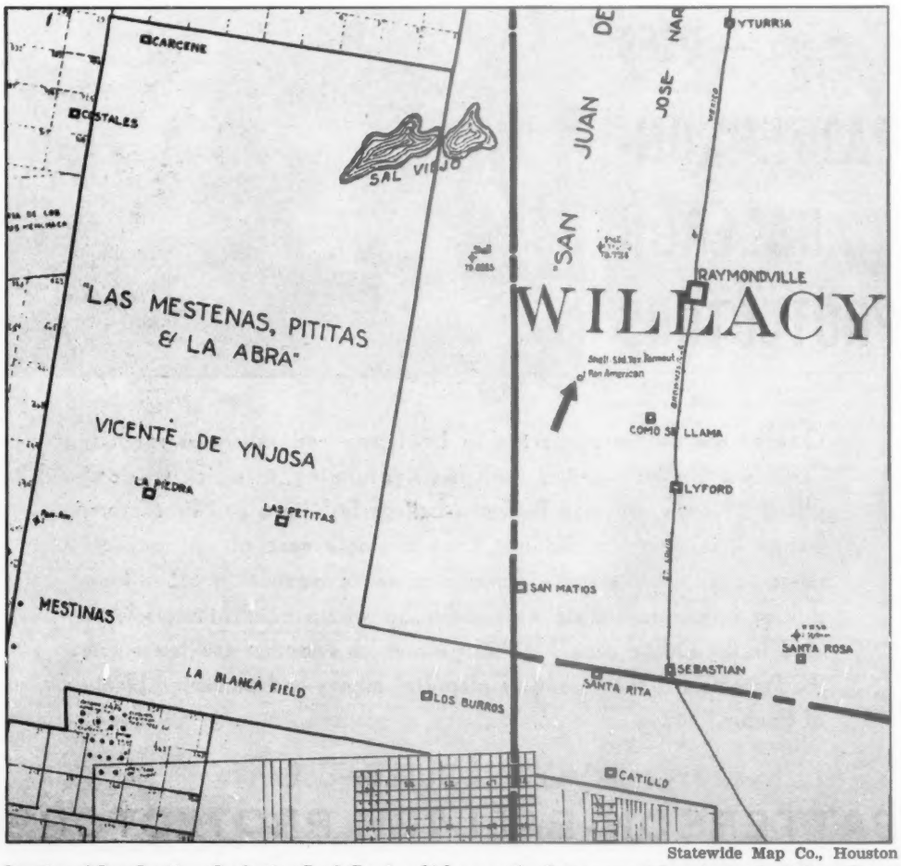
Shield Oil Co. 1 Allen, which opens distillate production 4,700 ft. north of Shield field, Nueces County continues to be tested, and is showing an increase in production, but is also showing a small amount of salt water. On a recent gage the well flowed 153 bbl. of distillate and 9 bbl. of salt water per day through a ¼-in. choke. Tubing pressure was 2,515 lb. and casing pressure 2,575 lb. The well is testing sand through perforated casing at 6,970-74 ft.

Drilling activity on the east flank of the Stratton field, Nueces County is expected to be curtailed to some extent by the abandonment of S.E.W Oil Co. 1 Stelzig which was quit at a total depth of 7,015 ft. with no shows reported. Another producer was scheduled to be added to the area as Southern Minerals Corp. 5 Stratton Community is bottomed at 6,640 ft. and 5½-in. casing was cemented at 6,636 ft. A total of 7 operations are listed for the area which makes it one of the most active in the district.

Wildcat Locations

Drilling was scheduled to be started on two new wildcat tests in Bee County. West of Pettus about 4 miles, Magnolia staked location for 1 Page in the W. T. Evans Survey, while 3½ miles southeast of Beeville, Pummill Oil Co. staked location for 1 F. Willman in the John Ryan Survey.

In Duval County, Pocono Development Co. staked location for 1 Charles Adami in Survey 349, while 5 miles southwest of the Muralla field, Tom Callahan has assembled a small block, and is expected to announce location for a Pettus sand test in the near future. The block centers around the W. C. Gravis lands.



Statewide Map Co., Houston

Location of Pan American Production Co. 1 Garcia which opens the first commercial production in Willacy County

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Jim Wells County

Orange Grove field: Tidewater 2 Natho, 221 bbl., 11/64-in. choke, perf. casing 5,076-84 ft., T.D. 5,091 ft.
Wade City field: Anderson-Prichard 7 Mueller, 288 bbl., 11/64-in. choke, perf. casing 4,797-4,801 ft., T.D. 4,934 ft.
T. H. McElvain 3 Blaschke, 130 bbl., ⅛-in. choke, perf. casing 4,914-18 ft., T.D. 4,920 ft.

Nueces County

Agua Dulce field: Richardson Petroleum Co. 1 Guaranty Title and Trust Co., 168 bbl., ⅛-in. choke, sand 6,889-95 ft., T.D. 7,209 ft.
Richard King field: Southern Minerals Corp. 15-B Richard King, 106 bbl., ⅛-in. choke, perf. casing 5,647-50 ft., T.D. 5,655 ft.
East Flour Bluff field: Humble 1-G State, 182 bbl., ⅛-in. choke, T.D. 6,778 ft.
Wildcat: H. H. Howell 1 Schulze, dry, T.D. 7,232 ft.

Refugio County

Tomoconnor field: Quintana 16 Heard, 639 bbl., ¼-in. choke, perf. casing 5,874-82 ft., T.D. 5,925 ft.

San Patricio County

Midway field: Pal Meadow Oil Co. 1-A Coggin, 120 bbl. fluid, 45 per cent oil, 55 per cent salt water, 11/64-in. choke, perf. casing 5,334-38½ ft., T.D. 5,363 ft.

Victoria County

McFaddin field: Transwestern 17-E McFaddin, 5 bbl. distillate, ⅛-in. choke, perf. casing 4,994-5,003 ft., T.D. 5,400 ft.

LAREDO DISTRICT

Duval County

Driscoll field: Magnolia 7 Duval County Ranch Co., dry, T.D. 1,620 ft.
Casa Blanca field: Magnolia 6 Duval County Ranch Co., 27 bbl., jetting, T.D. 1,430 ft.
Hoffman field: Cox & Hammon 1 Salazar, gas well, perf. casing 2,626-30 ft., T.D. 2,760 ft.
Lundell field: Magnolia 17 Duval County Ranch Co., dry, T.D. 1,666 ft.

Hidalgo County

Nichols field: Royal Oil & Gas Co. 1-A Yturria Town and Improvement Co., 52 bbl., ⅛-in. choke, perf. casing 3,497-3,502 ft., T.D. 3,553 ft.

Jim Hogg County

Colorado field: C. Andrate 3-E Trevino, 175 bbl., ¼-in. choke, T.D. 2,946 ft.
Humble 23 King, 169 bbl., 3/16-in. choke, T.D. 3,027 ft.
V. F. Neuhaus 3-E Trevino, 220 bbl., 1¼-in. choke, sand 2,933-46 ft., T.D.
Sun 9 Thaxton, 176 bbl., 4/32-in. choke, T.D. 2,955 ft.
Kelsey field: Humble 21 Bass, 94 bbl., 7/64-in. choke, T.D. 4,748 ft.
Wildcat: Jay Simmons 1 Pena, dry, T.D. 3,172 ft.

La Salle County

Wildcat: H. R. Cullen 1-B Wildenthal, dry, T.D. 7,808 ft.

(Continued on Page 102)

By
STAFF CORRESPONDENT

Jasper and Effingham Co.'s Taking Play From South

MATTOON, Ill., Nov. 25.—Activity dropped in Illinois during the past week as 65 wells were completed of which 40 were producers. Activity in the Salem field was practically at a standstill with only one completion good for 49 bbl., while Louden field recorded six completed producers with an initial production of 1,112 bbl., and four dry holes. White County was also below average as 1 dry hole and 12 producers were completed for an average production of 103 bbl. per well. The remaining 41 wells were scattered throughout the basin area, and included 21 producers with an initial production of 2,753 bbl. or 131 bbl. per well. One gasser, Stiles et al 1 Hangton in S½ SW NW, Lawrence County, was completed for 24,000,000 cu. ft. Production was from the Buchanan at 1,106-11 ft.

The principal activity in the state is now in the East Calvin pool in White County where there are 44 tests under way. Second is Louden with 26 locations and active tests, while there are 17 drilling wells in the Hoddville pool in Hamilton County.

Jasper County

Increasing activity is indicated in Jasper County where a new field was assured when Schieck and Buerkles 1 Payne-Kermickle, S½ NE NE 5-5n-10e, flowed 56 bbl. in 30 minutes from the McClosky at 2,770-73 and 2,792-97 ft. This gage was through tubing. The well began flowing after plug was drilled, but was killed with water so that tubing could be run. The test is a mile and a half from the nearest production.

Pure Oil Co. has announced the location of two offsets to the discovery well. The new pool is 1½ miles north and slightly east of the West Liberty pool in the extreme southern part of the county, and it is quite possible that it marks an extension to that pool.

An attempted west extension of the West Liberty pool was a failure as Jasper Oil 1 Poehler, N½ NE NW 7-5n-10e, was abandoned after getting a show of oil in the McClosky at 2,878-80 ft. Pure 1 Dickerson-Harbey, E½ NW NW 17-5n-10e, in the pool was flowing at the rate of 1,100 bbl. natural, from the McClosky at 2,799-2,810 ft.

Effingham County Discovery

Another area was officially opened this week in Effingham County as Kilpatrick and Hartshorns 1 Mason Comm., SE SE NW 2-6n-5e, pumped and flowed 281 bbl. in a recent 24-hour test from the McClocky at 2,489-2,502 ft. At least half a dozen tentative locations have already been reported staked in this area.

Benoist Test

The Benoist sand may be tested for the first time in the Albion field of Edwards County at Morrison and Noah 2 West Barnes, SE SW SE 13-2s-10e, where 17 ft. of saturation was cored in the formation. A 45-minute drill-stem test showed oil and some water. The well also recovered saturation in the McClosky at 3,113 ft. and is drilling ahead to the lower McClosky. Present production in the field is from the upper and lower McClosky and the Bridgeport.

The three Perry County wildcats of which much was expected last week have all proved disappointments and have been abandoned as dry holes in the Cypress. They are Blankenship 1 Malinsky, NW NW NE 24-4s-2w, and 1 Bathon estate, SW SW NE 15-4s-2w, and Thompson Drilling Co. 1 Prusick, SE NW NW 13-4s-2w.

Old Fields

The last stages of drilling in the Louden field are approaching as a number of inside locations are being drilled up and the field is becoming ringed with dry holes. At the same time, Carter Oil Co. has announced the abandonment of six old producers in the field.

In Salem there was only one small completion. Here, the Texas Co. reports working over an even 100 wells in pursuance of its secondary exploitation campaign. The St. Louis-Salem pays just above 2,200 ft., and the lower Aux Vases are the main horizons under development at this time. Many of the wells are former Devonian and McClosky producers.

The normal procedure is to acidize the lime pays with from 3,000 to 5,000 gal. acid and to shoot the Aux Vases with 100 qt. A few of the wells flow naturally. Some of the recompletions include inclined wells drilled under Lake Centralia. Of the 100 recompletions, 57 are in the Aux Vases and 43 are in the St. Louis-Salem.

ILLINOIS COMPLETIONS

Bond County

W. N. Lee 1 Robinson ..... SW SE SW 18-6n-2w
Dry, T.D. 710 ft.

Clinton County

Shell 1 R. Koelmel ..... NE SW SW 1-1n-1w
Salt-water disposal well, 3,000 gal. acid, Salem 1,710 ft., T.D. 2,220 ft.

Edwards County

Superior 1 Hedge ..... SE SE NW 18-2s-11e
Pumped 11 bbl., 15 per cent water, 3,000 gal. acid, McClosky 3,102-06 ft. and 3,166-75 ft., P.B. to 3,101 ft., 20-qt. shot, Benoist 2,943-51 ft., T.D. 3,178 ft.
Superior 2 Hedge ..... SE SE SW 18-2s-11e
Pumped 31 bbl., 8 per cent water, 10,000 gal. acid, McClosky 3,125-28 ft., T.D. 3,184 ft.

Fayette County—Louden Field

Cooper et al 1 Hogue ..... SE SW SW 9-8n-3e
Dry, Cypress 1,566 ft., Paint Creek stray 1,629 ft., slight show, T.D. 1,653 ft.
Carter 1 Makin-Gregg ..... NW NW SE 13-8n-3e
Pumped 72 bbl., 10-qt. shot, Cypress sand 1,525-49 ft.
Carter 4 J. C. Beck ..... NW SW SW 16-8n-3e
Pumped 54 bbl., 10-qt. shot, Cypress 1,520-38 ft., 15-qt. shot, Paint Creek stray 1,575-91 ft.
Carter 4 A. H. Lilly ..... NE NE SW 16-8n-3e
Dry, 10-qt. shot, Paint Creek stray 1,588-1,620 ft.
Carter 3 Logue ..... SW NW SW 22-8n-3e
Pumped 516 bbl., 60-qt. shot, Cypress 1,415-54 ft., 20-qt. shot, Paint Creek 1,475-84 ft., 40-qt. shot, Benoist 1,496-1,525 ft.
Ginsburg 4 Rhodes-A ..... NE NW SE 27-8n-3e
Pumped 8 bbl., 40-qt. shot, Paint Creek stray 1,551-75 ft.
Carter 3 E. Sherman ..... SW NW NW 29-8n-3e
Dry, show oil after 40-qt. shot in Cypress sand 1,553-75 ft.
Magnolia 6 S. Clow ..... NE SE SW 32-8n-3e
Flowed 420 bbl., 40-qt. shot, Benoist 1,508-25 ft.
Carter 1 Sanford ..... NW NW NE 9-7n-3e
Pumped 42 bbl., 20-qt. shot, Cypress 1,550-68 ft.
Carter 16 McCormick ..... NW SW SE 18-7n-3e
Dry, Paint Creek stray 1,591-1,602 ft.

Gallatin County

Egyptian T. & T. 2 fee ..... SE NE SW 16-8s-10e
Pumped 30 bbl., Tar Springs 2,082 ft., T.D. 2,094 ft., P.B. to 2,090 ft.

Hamilton County

Kingwood 1 Williams ..... S½ SE NE 3-4s-6e
Pumped 50 bbl. oil and 180 bbl. water, McClosky 3,460-68 ft., T.D. 3,578 ft., P.B. to 3,521 ft.
McBride 3 L. A. York ..... NE SE NE 34-5s-6e
Pumped 55 bbl. oil and 11 bbl. water, 15-qt. shot, Benoist 2,949-67 ft.
J. C. Howell 3 Campbell ..... SW NE NE 34-5s-6e
Pumped 160 bbl. oil and 30 bbl. water, 25-qt. shot, Benoist 2,971-92 ft.
Texas 2 Morris ..... NE NW NE 7-6s-7e
Pumped 6 bbl., 9-qt. shot, Benoist 2,870-83 ft., St. Louis 3,244 ft., T.D. 3,250 ft., P.B. to 2,682 ft.
A. Cameron 3 F. R. Wilson ..... NE SW NE 6-6s-7e
Pumped 40 bbl., 40-qt. shot, Cypress 2,698-2,718 ft., T.D. 2,722 ft.

Jasper County

Jasper Oil 1 O. Poehler ..... N½ NE NW 7-5n-10e
Dry, Glen Dean 2,338 ft., Benoist 2,726 ft., Aux Vases 2,786 ft., Ste. Genevieve 2,835 ft., show oil, McClosky 2,878-80 ft., T.D. 2,920 ft.

Jefferson County

N. Redwine 1 Cameron ..... NW NW NE 16-1s-2e
Dry, Tar Springs 1,528 ft., Paint Creek 2,018 ft., Ste. Genevieve 2,204 ft., T.D. 2,283 ft.
Grand Prairie 3 Kasten ..... NW NE NE 9-1s-1e
Pumped 180 bbl. in 12 hr., Benoist 2,076-89 ft.

Lawrence County

Stiles et al 1 Hangton ..... S½ SW NW 7-4n-10w
24,000,000 cu. ft. gas, Buchanan 1,106-11 ft.
United Drilling 1 Fornhoff ..... SW NW SE 27-2n-13w
Pumped 20 bbl. oil and 5 bbl. water, 6,000 gal. acid, McClosky 2,694-99 ft., T.D. 2,712 ft.

Marion County

Washburn & Romine 1 Konrad ..... NW NE SE 8-2n-1e
Pumped 52 bbl. oil and 5 bbl. water, 100 gal. acid, Devonian 2,989-91 ft.

Marion County—Salem Field

Texas 2 Branch ..... SW NE NW 4-2n-2e
Pumped 49 bbl., McClosky 2,144-49 ft., T.D. 2,151 ft.

Montgomery County

L. C. Thorpe 1 Calloway ..... NE SE SE 31-11n-5w
Dry, T.D. 612 ft.
Scherrer et al 1 Johnson ..... NW SW SE 24-10n-5w
Dry, T.D. 688 ft.
W. L. Topf 1 Neiman ..... E½ E½ SE 30-8n-5w
Dry, Paint Creek 705 ft., Benoist 710 ft., Aux Vases 752 ft., Ste. Genevieve 780 ft., T.D. 865 ft.

McDonough County

W. Vette 1 J. W. Post ..... NE SE NW 10-4n-4w
Dry, Niagaran 440 ft., T.D. 530 ft.

Perry County

Blankenship 1 P. E. Malinsky ..... NW NW NE 24-4s-2w
Dry, Benoist 1,328-37 ft., Cypress sand 1,120 ft., T.D. 1,337 ft., P.B. to 1,126 ft. Test after 10-qt. shot showed 60 ft. oil in 24 hr.
Blankenship 1 Bathon Est. ..... SW SW NE 15-4s-2w
Dry, Cypress sand 1,184 ft., Benoist 1,299 ft., T.D. 1,325 ft.
Thompson 1 Prusick ..... SE NW NE 13-4s-2w
Dry, Cypress 1,110 ft., Benoist 1,294 ft., T.D. 1,301 ft.

Randolph County

F. Oswaldt 1 J. C. Fullerton ..... NW SW SW 26-5s-6e
Dry, Devonian 1,985 ft., T.D. 2,053 ft.

Richland County

Pure 2 R. Compton ..... E½ NE NE 36-5n-9e
Pumped 138 bbl., 5,000 gal. acid, McClosky 2,849-62 ft., T.D. 2,879 ft.
Pure 2 Varner-Wachtel Consol. ..... SE SW NW 18-4n-10e
Dry, Ste. Genevieve 2,899 ft., slight show oil 2,933-70 ft., T.D. 2,970 ft.
Pure 1 MaHoon Consol. ..... W½ SW NE 7-4n-10e
Flowed 375 bbl., 5,000 gal. acid, McClosky 2,932-39 ft., T.D. 2,945 ft.

St. Clair County

Sklar 36 M. Dyroff 28-1n-10w
Pumped 65 bbl. oil and 35 bbl. water, 1,000 gal. acid, Trenton 425 ft., T.D. 442 ft., P.B. to 433 ft.
Sklar 7 Hall-Wilde 28-1n-10w
Pumped 80 bbl. oil and 20 bbl. water, 1,000 gal. acid, Trenton 409-39 ft.

Saline County

Spiller 1 Sisk ..... NE NE NE 15-10s-6e
Dry at 1,794 ft. in Golconda, Hardinsburg 1,725 ft., small shows in Waltersburg and Tar Springs.

Shelby County

J. Powell et al 1 Rincker ..... SW SW SE 22-10n-5e
Pumped 25 bbl. oil and 20 bbl. water first 24 hr., then 21 bbl. oil and 43 bbl. water, then 17 bbl. oil and 46 bbl. water third 24 hr. Aux Vases 1,941-54 ft., top Ste. Genevieve 1,999 ft., T.D. 2,138 ft., P.B. to 1,966½ ft.
J. Powell et al 1 Fritz ..... SE SE NW 23-10n-5e
Glen Dean 1,682 ft., Cypress sand 1,820 ft., Paint Creek 1,910 ft., dry, T.D. 1,926 ft.

Washington County

Barton 1 Edmiston ..... NE NE SW 5-2s-1w
Dry, Glen Dean 1,316 ft., Cypress 1,487 ft., Benoist 1,654 ft., T.D. 1,665 ft.

Wayne County

Pure 2 Belle Broyles ..... N½ SW SW 3-2n-8e
Pumped 200 bbl. oil and 3 bbl. water, 5,000 gal. acid, McClosky 3,002-05 ft., T.D. 3,070 ft.
Pure 8 Hubble-A ..... E½ SE NW 32-2n-8e
Flowed 767 bbl., 5,000 gal. acid, McClosky 3,024-38 ft., T.D. 3,080 ft.
Pure 6 J. A. McCracken-A ..... NW SW NW 4-1n-8e
Pumped 90 bbl., 3,000 gal. acid, McClosky 3,027-30 ft., T.D. 3,100 ft.
Pure 1 J. S. Elliott-A ..... W½ SE NE 1-1n-7e
Pumped 196 bbl. oil and 31 bbl. water, 5,000 gal. acid, McClosky 2,989-94 ft., T.D. 3,050 ft.
Miller & McFarland ..... NW SE SW 4-2s-7e
Pumped 182 bbl., 1,500 gal. acid, McClosky 3,270-80 ft., T.D. 3,302 ft.

White County

Weinert 4 Miller Bros.-Andrews ..... NW SW SW 20-3s-8e
Pumped 45 bbl. oil and 100 bbl. water, McClosky 3,356-78 ft., T.D. 3,430 ft.
New Penn. Dev. 2 H. G. & C. A. French ..... NW SW NW 20-3s-8e
Pumped 175 bbl., 40-qt. shot, Aux Vases 3,231-63 ft., T.D. 3,265 ft.
W. R. Cory 1 W. A. Felix ..... SE SE NE 19-3s-8e
Pumped 68 bbl., 40-qt. shot, Aux Vases 3,224-52 ft., T.D. 3,257 ft.
Cobb et al 1 H. Gray ..... SE SW NE 19-3s-8e
Location abandoned.
Herndon 3 J. Bond ..... SE NW NE 8-4s-14w
Pumped 47 bbl., 80-qt. shot, Benoist 2,683-2,704 ft.,
Cherry & Kidd 4 C. C. Calvin ..... NW NE NE 8-4s-14w
Pumped 120 bbl., 2,000 gal. acid, McClosky 2,918-23 ft., 2,934-38 ft.
Magnolia 3 J. J. Bond ..... NE SE SW 8-4s-14w
Pumped 150 bbl., 100-qt. shot, Paint Creek stray 2,671-12 ft., T.D. 2,720 ft.
Tide Water 5 Dennis ..... NW SE NE 33-4s-14w
Pumped 125 bbl., Cypress 2,556-83 ft.
Superior 2 G. R. Collins ..... SE SE NW 33-4s-14w
Pumped 115 bbl., 80-qt. shot, Aux Vases 2,831-39 ft., T.D. 2,841 ft.
Superior 3 H. C. Ford-C ..... NE NE SW 27-4s-14w
Pumped 150 bbl., 5,000 gal. acid, McClosky 2,889-93 ft., 2,910-14 ft.
Tipton 3 Boultinghouse ..... NW SW NW 16-5s-14w
Location abandoned.
Magnolia 5 J. J. Bond ..... SE SE SW 8-4s-14w
Pumped 16 bbl., 100-qt. shot, Paint Creek stray 2,665-91 ft., 2,695-2,700 ft., T.D. 2,740 ft.
Magnolia 4 J. J. Bond ..... SW NW SE 8-4s-14w
Pumped 150 bbl., 100-qt. shot, Benoist 2,687-96 ft., T.D. 2,724 ft.
Carl Robinson 1 Taylor ..... S½ NW NE 11-5s-9e
Dry, Ste. Genevieve 3,308 ft., T.D. 3,424 ft.

Bowers et al 4 Storms NW SE NE 22-6s-9e
Pumped 70 bbl., 30 qt. shot, Waltersburg 2,217-54 ft.

ILLINOIS DRILLING REPORT

Bond County

J. Farrelly 1 Kyle . . . . . SW NW NW 28-4n-4w
Fishing 1,417 ft.
J. E. Barnes 1 Watts . . . . . NE SW NE 7-5n-2w
Drilling 1,000 ft.
J. Harding 1 Gottfried . . . . . NE NW NE 28-5n-4w
10-in. 420 ft., S.D.
D. C. Leiberknecht 1 Seabaugh SW SW SE 22-6n-4w
Location.

Clark County

Sherrill et al 1 Jeffers . . . . SE NE SE 31-11n-13w
Rigging up standard tools.
Wisconsin 1 Cunningham . . . SW SW SW 34-12n-14w
S.D. 300 ft.

Clay County

Dee Miller 1 Smith . . . . . NE SW SW 15-3n-7e
S.D. 3,033 ft.

Clinton County

Nat. Consumers Oil 1 Fricke . NW SE SW 14-1n-2w
Drilling 1,045 ft., Tar Springs 985 ft., 8-in. 900 ft.

Coles County

F. H. Bragassa 1 Frugden E½ NE SE 11-11n-7e
Lonsdale 810 ft., Shoal Creek 670 ft., drilling 1,020 ft.

Crawford County

Babler et al 1 Mitchell . . . . . N½ NW NW 21-6n-13w
Location.

Edwards County

R. Neeley 1 Michael . . . . . NW SW NW 8-1s-10e
Drilling 1,300 ft.
J. D. Barnes 1 Hodgson . . . . . N½ NE 1-2s-10e
10-in. 50 ft., S.D. 2,030 ft.

Effingham County

Turner 1 Pruett . . . . . SE SW NW 7-5n-3e
Drilling 1,802 ft.
C. L. Erwin 1 Patterson SW SW NE 18-8n-4e
Pumped 22 bbl. oil and 30 bbl. water in 6 hr., testing.
T.D. 1,686 ft., P.B. 1,578 ft.
K. Kilpatrick 1 Mason Comm. SE SE NW 2-6n-5e
T.D. 2,502½ ft., D.S. test 2,489-2,502½ ft., P.&F. 281
bbl. oil, testing.
Jarris Co. 1 L. Reitz . . . . . SW SW SE 13-7n-5e
10-in. 195 ft.

Ford County

Nelson et al 1 Erp . . . . . SW NW SE 19-24n-7e
St. Peter 2,112 ft., drilling 2,408 ft.

Fayette County

Luttrell et al 1 Bail . . . . . NE SW SE 16-7n-3e
Drilling 1,577 ft., Glen Dean 1,410 ft., Cypress sand
1,566-70 ft., saturation.
John Pummill 1 Isbell . . . . NW NE SW 33-8n-1w
Glen Dean 1,105 ft., Cypress 1,279 ft., S.D. 1,282 ft.

NO MATTER WHERE YOU USE IT
RED SEAL POWER
IS Economical POWER
Continental
CONTINENTAL MOTORS
Powers More Products the World Over
AMERICA'S STANDARD
21 SIZES FOR EVERY OIL FIELD OPERATION
Continental
RED SEAL ENGINES
The Red Seal line beginning as low as 69 cu. inch displacement is famous for sturdy performance. Here are some important Continental features:
1. Quick, push-button starting.
2. Full length of cylinders surrounded by water for efficient cooling with jackets designed to eliminate hot spots.
3. Precision, interchangeable steel backed bearings.
4. Dust and dirt proof crankcase.
5. Cast iron base with extra large oil capacity available for all models.
Distributors with Sales and Service Facilities
ORIENTAL TRANSMISSION & PACKING CO.
2612-14 Commerce St., DALLAS, TEXAS
316 Thompson Building, TULSA, OKLA.
STANDARD TOOL & MACHINE CO.
LONGVIEW, TEXAS
INDIVIDUAL PORTING INSURES SMOOTH BALANCED POWER
With Continental Individual Porting an identical balanced mixture of fuel and air is delivered to each and every cylinder. Each cylinder has its individual intake passage, the intake manifold having separate passages which conduct fully atomized fuel in equal proportions to each intake valve. This Red Seal induction system appreciably aids economy, power and engine performance—it definitely shortens warm-up periods and lessens oil dilution. It also reduces vibration and roughness with a consequent saving in repair bills.
Continental Motors Corporation
MUSKEGON, MICHIGAN

Kingwood 1 Aukamp . . . . . SW SE 30-5n-3e
Benoist 1,900 ft., showed 1 bbl. oil and 1 bbl. water.

Franklin County

E. S. Adkins 1 Orient Coal Co. NE SW SE 24-6s-2w
Show Tar Springs 2,111-23 ft.
G. Venorsky 1 L. Auten . . . . . W½ SE SW 22-7s-4e
S.D. 3,202 ft.
Helmerich & Payne 1 P. M. Marvel . . . . . NW NW SW 36-7s-4e
T.D. 3,220 ft., electric log showed porosity in Golconda 2,650-75 ft., to test.
E. S. Adkins 1 Orient Coal Co. . . . NE SW SE 24-6s-2w
Show Tar Springs 2,111-23 ft., T.D. 3,045 ft., plug back to 2,150 ft., 7-in. at 2,112 ft.

Gallatin County

Egyptian Tie & Timber 2 fee . . . SE NE SW 16-8s-10e
T.D. 2,094 ft., P.B. 2,090 ft., waiting on pipe.
Carter 1 B. M. York . . . . . SE SE SW 33-7s-8e
T.D. 2,840 ft., P.B. 2,050 ft., drilled out pipe in Palestine, H.F.W., squeezed, swabbed 222 bbl. fluid per day, 30 per cent water.
Snowden & McSweeney 1 Frey . SE SE NW 19-8s-10e
McClosky 2,762-74 ft., test show trace water, 7-in at 2,750 ft., T.D. 2,781 ft., acidizing with 2,000 gal.

Hamilton County

Duncan 1 Zeller . . . . . SE NE NE 34-3s-5e
Drilling 661 ft.
Exchange-Kingwood 1 Prince . . . NW SW NW 31-5s-7e
McClosky 3,126 ft., St. Louis 3,247 ft., D.S. test in McClosky, showed oil and water, T.D. 3,257 ft., 5½-in. at 3,240 ft., perf. 3,214-18 ft., swabbed 1 bbl. water per hr.; perf. 3,149-53 ft., filled up 700 ft. fluid in 45 min., set plug at 3,200 ft., perf. 12 shots 3,185-88 ft., filled up 2,500 ft. oil in 2 hr., testing.
Ohio 1 R. E. Grimes . . . . . NW NW NW 2-6s-6e
Benoist 2,935 ft., 5½-in. at 2,936 ft., T.D. 2,951 ft., testing.
Kingwood 1 McGuire . . . . . W½ SW NW 11-5s-7e
Drilling 2,270 ft.

Hancock County

Sam Tate et al 1 J. Rice . . . . . SW NE NW 28-4n-5w
Drilling 1,400 ft.

Jackson County

W. R. White 1 Dean . . . . . NE NW NW 18-9s-3w
T.D. 1,230 ft., 7-in. at 1,143 ft., P.B. 1,183 ft., to acidize show at 1,180 ft.
Barton & Shipmen 1 P. Maharry . NE NE SE 20-9s-3w
S.D. 150 ft.

Jasper County

Anderson & Vorhees 1 A. Pippen SE NW SW 16-8n-10e
McClosky 2,551 ft., drilling 2,581 ft., now pumping 2 bbl. oil and 120 bbl. water per day, testing S.D. 2,600 ft.
Pure 1 Dickerson-Harvey Con. E½ NW NW 17-5n-10e
Ste. Genevieve 2,368 ft., McClosky pay 2,799-2,810 ft., flowed 91 bbl. in 4 hr., testing, T.D. 2,820 ft.

Jefferson County

Vawter 1 Modglin . . . . . NW SE SW 9-1s-1e
Rigging up rotary.

Lawrence County

W. Kavs 1 Griggs . . . . . SW SW SE 12-3n-13w
Drilling 200 ft.

Madison County

G. A. Fisher 1 F. C. Kiskadden . . SE SW NE 27-5n-8w
10-in. 133 ft., S.D.

Marion County

Martin et al 1 Robinson . . . . . SW SE SW 4-1n-2e
Drilling below 9,500 ft.
Paul Rossi 8 Brooks . . . . SW NE SW 29-2n-2e
Trenton test, moving in, Devonian 3,327 ft., T.D. 3,438 ft.
Clevetex Prod. 1 E. Squibb . . . . . W½ SE SE 29-3n-3e
Drilling 2,400 ft.

McDonough County

Vancroft & Bowman 1 W. A. Murray NW SE SE 8-5n-4w
Drilling 213 ft.
Ripley Drlg. Co. 1 T. A. Jeffries . . NW NE SW 21-4n-4w
Drilling 210 ft.

Macoupin County

Bridges & Valbert 1 Feiker . . . . . NW NE SW 1-9n-7w
Drilling 605 ft.
F. Mudgett 1 Dorks . . . . . NE NE NE 30-10n-7w
8-in. 196 ft.

McLean County

Funksgrove O. & G. 1 Crawford . . NW NW NW 28-22n-1e
Running casing 350 ft.

Montgomery County

H. Greene 1 Blackburn . . . . . SW SE NE 7-7n-2w
Rigging up.
J. E. Hood 1 Dambacher . . . . . SE NE SE 16-12n-5w
Drilling 615 ft., 10-in. 20 ft., 8-in. 165 ft., 6-in. 590 ft.
L. C. Kessler 1 A. Nowak-A . . . . . SE NE NW 11-7n-4w
T.D. 905 ft.

Pope County

Ohio 1 Gen. Amer. Life . . . . NE SE SE 10-11s-5e
Benoist 1,171-1,205 (?) ft., drilling at 1,251 ft.

Shelby County

A. Ginter 1 E. Fox . . . . . NW SE NW 34-20n-4e
12-in. 35 ft., S.D.
J. Moore et al 1 fee . . . . . NW NW NW 33-10n-3e
Drilling 255 ft.

Tazewell County

Bartelmay 1 Mathis . . . . . SW NW SW 24-25n-3w
Running casing 350 ft.

Wabash County

Ryan 1 Schafer . . . . . NE NW NE 7-2s-13w
Drilling 400 ft.

White County

Noah & Morrison 1 S. Kershaw SW NW NE 22-3s-10e
Slight show oil McClosky 3,282 ft., P.B. to 2,950 ft., to test Paint Creek 2,923-48 ft.
French & Cotton 1 May . . . . . S½ NW NW 30-3s-9e
Location.
O. O. Borden 1 I. McCallister . . . NE SE NE 7-5s-14w
Cypress sand 2,639 ft., T.D. 2,671 ft., ran electric log and shut down.
Noah & Morrison 1 S. Kershaw . SW NW NE 22-3s-10e
St. Louis 3,275 ft., slight show oil, McClosky 3,282 ft. P.B. to 2,952 ft., to test Paint Creek 2,923-48 ft., D.S. test open 45 min., recovered 60 ft. oil-cut mud and 1,100 ft. salt water.
J. T. Bradley 1 C. Randolph . . . NE NE SE 32-6s-9e
Rosiclare 3,033 ft., show 3,035-48 ft., drilled plug, no show oil, to shoot.

(Continued on Page 92)

Osceola County Gets Another Gas Field in Michigan Stray

By OTTO C. PRESSPRICH

SAGINAW, Mich., Nov. 25.—An oil test rated as a dry hole after encountering a good show of crude in the St. Peter formation in Barry County and the possibility of oil in commercial quantities from the shallow Berea strata in Ottawa County held chief interest in Michigan oil circles last week.

Meanwhile operations took an upward spurt as the result of a new rush for drilling permits, the state Conservation Department announcing it had issued 29 during the week, one of the largest numbers for any week this year and bringing the 1940 total to 1,020. Nine of the permits went to Allegan County, five to Ottawa, three to Van Buren, two to Arenac. The rest were scattered, one to a county, to Branch, Gratiot, Lenawee, Clare, Midland, Huron, Roscommon, Ogemaw, Shiawassee and Kent.

The deep test was Sun Oil Co. 1 Kidder wildcat in Rutland Township, Barry County. Activity ended with the hole at 5,013 feet after a show of oil was logged at 4,960 ft. in the top of the St. Peter sandstone. Geologists said the show was the best yet noted in the formation in Michigan. However, as drilling continued, no further show was recorded. Geologists explained that the trend of formations in Michigan would place the St. Peter formation between 11,000 and 12,000 ft. in the Michigan basin area.

The Berea producer, completed in the northern part of Ottawa's Tallmadge Township is Daily Crude Oil Co. 1 Powell wildcat. The test after nitro shot was producing 16 bbl., total depth being 1,185 ft.

New Gas Field in Osceola

Taggart Bros. new gas strike in Osceola County, near Reed City, marked that firm's third North Central Michigan natural gas find this year, others being the Riverside-Missaukee field, and the Marion-Winterfield. The newt test, 55 Cornell is in Section 30 of Lincoln Township, a mile north of Weber Oil Co. 1 Gabel discovery oil well which had passed a strong gas show in the Michigan stray before being deepened to oil pay depth. The Taggart test is producing 7,500,000 cu. ft. a day at 1,245 ft.

Record Deep Test

In another of Michigan's deep tests, Gulf Refining Co. reported its 1 Bateson in Section 2 of Monitor Township, Bay County, had reached depth of 7,380 ft. Gas at that level, which is the deepest ever reached in Michigan, temporarily halted operations, threatened to blow the mud. Objective is a depth of between 9,000 and 10,000 ft.

Throughout the state, a total of 15 completions were recorded, two being natural gas wells, six being dry holes, including a gas test, six others producing oil at the combined initial rate of about 535 bbl. a day. Best of the wells were Jetter Drilling Co. 150 bbl. 3 Hence in Bloomindale of Van Buren and the 170-bbl. 1 Goodwin, completed by Sun Oil Co. in Gladwin's Beaverton.

The gas test failure was the Vic R. Wilson-Twin Drilling Co. 1 Boyd in Section 4 of Gratiot's North Star Township. It was the second dry test seeking confirmation of a natural gas pool which indicated the Wilson Cook strike of a few weeks ago is a "solitary."

Survey of Drilling Permits

The Michigan Conservation Department, surveying drilling permits issued in the past 13 years, reported Allegan County has passed Midland, for years heart of the Michigan basin oil pool, as the biggest lure for operators.

The department said that since September, 1927, when permits first were required, a total of 8,223 have been issued, 1,009 going to Allegan County, 990 to Midland, which fell behind in recent months as shallow formations of Southwestern Michigan received more concentrated development. Other ranking counties: Isabella 794 permits; Gladwin 644; Van Buren 618; Montcalm 561. The total for this year throughout the state is expected to be second to the peak year—1939—when permits totaled 1,465.

The department also estimated that Michigan's oil production this year will be in the neighborhood of 3,000,000 bbl. below the peak year. Output to November 1, this year, totaled 17,126,908. bbl.

MICHIGAN COMPLETIONS

Allegan County

Heath Township: Lucas & Thornberry 1 Waterman, N½ S½ S½ 13-3n-14w, dry, T.D. 1,640 ft.
Overisel Township: Bell-Marks, Inc., 1 Ter Har, NW SW SE 4-14n-14w, dry, T.D. 1,541 ft.
H. C. Nelson 3 Kroeze, SW SE SW Sec. 9, acid, 95 bbl., T.D. 1,496 ft.

Barry County

Rutland Township: Sun 1 Kidderm NW NW NW 8-3n-9w, show oil in St. Peter at 4,960 ft., dry, T.D. 5,013 ft.

Clare County

Winterfield Township: Taggart Bros. 52 Lockwood, C-NW 20-20n-6w, 1,200,000 cu. ft gas, T.D. 1,293 ft.

Gladwin County

Beaverton Township: Sun 1 Goodwin, SE NE NW 36-17n-2w, acid, 170 bbl., T.D. 3,850 ft.

Gratiot County

North Star Township: Vic R. Wilson and Twin Drilling

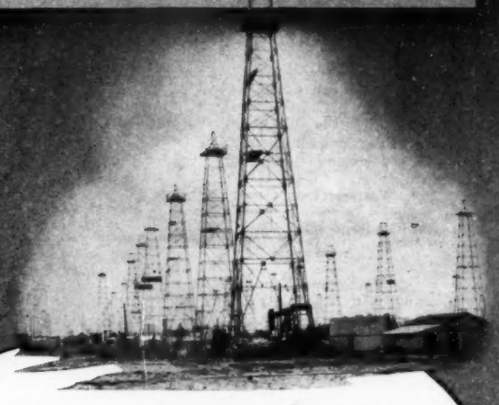
(Continued on Page 102)

The Powell Line is COMPLETE

• • • FOR EVERY SERVICE IN THE PETROLEUM AND OIL REFINING INDUSTRY

FOR INSTANCE—

THERE ARE POWELL VALVES UNIQUELY QUALIFIED TO FILL *Production* REQUIREMENTS



IRON BODY, BRONZE MOUNTED "Model Star" GATE (Fig. 1444)

Here is a valve that promises you extra strength and soundness of castings . . . thanks to Powell's rugged designing and the special alloy used in body, bonnet, and yoke. You have your choice of taper wedge discs, either solid or double, the latter of which feature a ball and socket bearing making them positively self-aligning to seats without loose spreaders, etc. Valve illustrated is of the outside screw, rising stem type, but can be had also with non-rising stem, known as Fig. 1431, if preferred.

Remember—

There's more to POWELL QUALITY than meets the BUYER'S EYE!

Follow our series of monthly full page advertisements revealing the hidden qualities that exist in all POWELL products.

POWELL VALVES

THE WM. POWELL CO. • CINCINNATI, OHIO

Chestnut Ridge Development Continues With Good Results

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Nov. 25.—There were 36 operations completed during the past week in the lower eastern fields, of which 9 were dry, 16 gas wells, and 3 oil producers with a daily initial of 27 bbl.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. is drilling 2 Piedmont Coal Co. at 6,732 ft. The gas has increased to 1,875,000 cu. ft. This company's No. 3 is drilling at 4,810 ft. The New Penn Development Co., William E. Snee, et al are drilling at 750 ft. in 3 Summit Hotel (Heyn). In North Union Township, Wasson et al are drilling at 6,567 ft. in 2 J. H. Sorg.

In Maryland, New Penn Development Co., William E. Snee, et al on the Humberson farm will reduce the hole at 6,363 ft.

Armstrong County

Kittanning Township: Equitable 1 David Shoemaker, 75,000 cu. ft. gas, Tiona sand, T.D. 3,653 ft.

Fayette County

Nicholson Township: Wahler-Powers 1 McKeefry Coal Co., 800,000 cu. ft. gas, Big Injun sand, T.D. 1,433 ft.

Greene County

Monongahela Township: Mayne et al 1 Stephenson, 121,000 cu. ft. gas, Big Injun sand, T.D. 1,462 ft.

Washington County

West Bethlehem Township: George Gray et al 1 Harry Long, dry, T.D. 2,990 ft.

Westmoreland County

Washington Township: Peoples 1 J. T. George, 83,000 cu. ft. gas, Bradford sand, T.D. 3,200 ft.

DRILLING

Armstrong County

Bethel Township: T. W. Phillips 1 Mrs. H. E. Gilchrist, 2,090 ft.
Boggs Township: J. K. Sharp et al 1 Joseph Sefton, 635 ft.
Burrell Township: Equitable 1 Mrs. George Cravener, 2,365 ft.
Cowanshannock Township: Peoples 1 James McKinney, 3,347 ft.
Peoples 1 William Boyer, cleaning out to deepen.
T. W. Phillips 3 Harry Boyer, 845 ft.
Equitable 1 Z. H. Hoover, 3,535 ft.
Shelocta 1 Park Rearick, moving in rig.
William McCollins, 1 A. L. McCullough, building rig.
East Franklin Township: Leithold Gas Co. 1 John Roofner, 1,470 ft.
Kiskiminitas Township: Shaw & Townsend 1 Michael Zitterberg, 3,150 ft.
Apollo Gas Co. 2 J. P. Wilson heirs, 835 ft.
Kittanning Township: Local Co. 1 B. H. Shreckengest, 1,825 ft.
Plumcreek Township: Peoples 3 Mrs. John Boyer, rigging up to drill deeper.
Shelocta 2 Harry Kough, rigging up.
Wayne Township: Penn Wayne 2 Ed Clever, 3,350 ft.
Daniel Sowers et al 2 William Rupp, 3,165 ft.
Louden Drilling Co. 1 Armstrong County Trust Co., 860 ft.

Clarion County

Monroe Township: Owens-Illinois Glass 1 J. C. Heinrich, fishing.
Piney Township: Frank Schreffler, 8 Clarion County Home, S.D. 956 ft.
Porter Township: Squirrel Hill Gas Co. 2 Charles Fagler, 560 ft.
Gourley Gas Co. 3 Andrew Gourley, 500 ft.
Red Bank Township: T. W. Phillips 1 E. C. Buffington, 2,920 ft.
T. W. Phillips 1 D. I. Miller, 2,185 ft.
Mayport Clay Co. 1 Samuel Wyncoop, 1,430 ft.

Fayette County

German Township: J. H. Carnell 1 Albert Lily, 1,223 ft.
Nicholson Township: Greensboro Gas 1 George Lecrone, 495 ft.
Greensboro Gas 1 Frank Mozo, 1,975 ft.
Duquesne Gas 1 Hattie Talbert, 850 ft.
Noolen Oil & Gas 1 J. D. McCann, 480 ft.

Greene County

Aleppo Township: Guy B. Patterson 1 Samuel Fuller, location.
Center Township: Devine et al 1 Hugh Smith, S.D. 1,965 ft., cementing.
Jackson Township: H. E. Milliken et al 1 E. Chaney, location.
Cleveland-Cameron Oil & Gas Co. 1 Cleveland Morris, location.
Monongahela Township: Harry Scott et al 1 Silas Provins, S.D. 550 ft.
Greensboro Gas 1 Charles Hopton, rigged up.
Morris Township: Romney Rutan et al 1 I. J. Clutter, building rig.
Richhill Township: Carnegie 2 Ella Sowers, pulling casing to deepen.
Wasmuth & Callahan 1 Goodwin heirs, cementing cave to deepen.
Manufacturers Light & Heat 1 Wm. Hughes, location.
Wayne Township: Freeland et al 1 J. H. Simpson, 2,141 ft.
Whiteley Township: Lewis, Pettit et al 1 Shields, 2,069 ft.

Indiana County

Armstrong Township: T. W. Phillips 1 W. E. Sell, 675 ft.
Center Township: T. W. Phillips 1 W. H. George, 2,560 ft.
Washington Township: Peoples 1 Robert Bates, moving in rig.
T. W. Phillips 1 Mary J. Fairman, 880 ft.
T. W. Phillips 1 D. C. Bothel, 672 ft.
T. W. Phillips 2 J. L. Jones, 425 ft.
T. W. Phillips 1 S. P. Kunkle, 1,440 ft.

Washington County

Amwell Township: Chivers et al 2 James Bristor, 1,950 ft.
Carnegie 4 N. B. Redd, cleaning out after shot.
Carnegie 1 D. C. Blake, building rig to deepen.
Morris Township: South Penn 1 Oliver Booth, 1,425 ft.
Somerset Township: Carnegie 1 Elizabeth Nicholl, 1,835 ft.
Carnegie 2 J. D. Abos, 510 ft.
Equitable 1 Riffle, 1,770 ft.
West Bethlehem Township: J. D. Amos et al 1 Frank Myers, 940 ft.

Westmoreland County

Allegheny Township: Apollo Gas Co. 2 Sadie Anderson, 1,075 ft.
Bell Township: Peoples 1 J. A. Kuhns, 3,340 ft.
Derry Township: Latrobe Steel Spring 1 Keystone Coal Co., 2,980 ft.
Washington Township: Peoples 1 J. M. Hill, drilling deeper, 3,872 ft.

WEST VIRGINIA

In Kanawha County, Columbian Carbon Co. is drilling the Copenhaver heirs tract near Coopers Creek at 5,323 ft. On the John Price farm a depth of 6,233 ft. has been reached. These wells are in Poca district and will be drilled to the Clinton sand.

In Harrison County Hope Natural Gas Co. is drilling at 8,295 ft. in the deep rotary test on the C. S. Gribble farm in Grant district.

In Jackson County Columbian Carbon Co. is drilling on the P. F. Riggs farm at 4,053 ft. on the F. F. Starcher farm the hole is being straightened at 2,081 ft., and on the F. L. Roliff farm the well has reached a depth of 1,040 ft. and is shut down to cement caves at 1,002-22 ft. These wells are in Ravenswood district. In Ripley district United Carbon Co. is drilling on the B. B. Meadow farm at 2,250 ft.

Boone County

Scott district: Sayre Oil & Gas 1 Wm. Hill, 73,000 cu. ft. gas, Big lime 1,310-1,548 ft., Berea 1,984-2,008 ft., Brown shale 2,800-3,329 ft., T.D. 3,329 ft.
Washington district: Hope 8508 Dora E. Hopkins, 140,000 cu. ft. gas, Big lime 2,247-2,415 ft., gas and oil in Big lime, Big Injun 2,415-52 ft., Berea 2,908-41 ft., gas and oil in Berea, T.D. 2,951 ft.

Braxton County

Birch district: Cameron Producing Co. 1 Vada A. Hamrie, dry, elev. 1,008 ft., Big lime 1,767-1,899 ft., Big Injun 1,899-1,949 ft., T.D. 1,995 ft.
Cameron Oil & Gas Co. 1 Charles Fulks, dry, Big Injun sand, T.D. 1,950 ft.
Otter district: Joe Rubin 1 Virgil A. Sands, dry through Big Injun sand, T.D. 2,062 ft.

Cabell County

Grant district: West. Va. Gas Corp. 1 Oliver Locke, dry, Brown shale, T.D. 3,887 ft.

Calhoun County

Sherman district: Hope 8522 Robt. Minney, 169,000 cu. ft. gas, Big lime 1,809-87 ft., Big Injun 1,887-1,933 ft., gas 1,908-33 ft., T.D. 1,963 ft.

Clay County

Henry district: Joe Rubin, 2 Adena Corp., dry, Big Injun 2,185-2,208 ft., T.D. 2,225 ft.
Otter district: Pittsburgh & West Va. 7758 R. B. Duffield, dry hole, elev. 1,022 ft., Big lime 1,944-2,032 ft., Big Injun 2,032-2,148 ft., T.D. 2,193 ft.
Pittsburgh & West Va. 7761 Ed L. Boggs, 1,050,000 cu. ft. gas, Blue Monday 1,805-37 ft., gas 1,837 ft., T.D. 1,839 ft.

Gilmer County

Center district: Carnegie 4 G. W. Miller, 240,000 cu. ft. gas, Salt sand 925 ft., gas 938-940 ft., T.D. 944 ft.
DeKalb district: A. E. Ellis et al 3 Cora Lockhart, 30,000 cu. ft. gas, Berea sand, T.D. 2,310 ft.
Glenville district: Pittsburgh & West Va. 7751 Lloyd Rinehart, dry, Big Injun 1,883-2,000 ft., T.D. 2,055 ft.

Lincoln County

Duval district: Reishman Bros. 2 Thomas Nelson, 60,000 cu. ft. gas, Brown shale 3,396-4,304 ft., gas 3,479-86 and 4,067-78 ft., T.D. 4,307 ft.
Jefferson district: Kanawha Gas & Utilities 1 Pearl Stowers et al, 231,000 cu. ft. gas, Brown shale 3,356-90 and 3,540-90 ft., T.D. 3,650 ft.

Pleasants County

Jefferson district: A. F. Marple 3 fee, 1 bbl. oil, Cow Run sand, T.D. 830 ft.
McKim district: F. R. Ball et al 1 Ellis Fleming, dry, Big Injun sand, T.D. 2,050 ft.

Putnam County

Teays Valley district: Liberty 1 P. R. Ross, 260,000 cu. ft. gas, Big lime 1,610-1,884 ft., Big Injun 1,884 ft. gas, T.D. 1,897 ft.

Ritchie County

Grant district: R. W. Richards et al 2 fee, 1 bbl., Maxon sand, T.D. 1,680 ft.

Wayne County

Union district: Hale & Burgess 1 Pearly Brumfield, 320,000 cu. ft. gas, Brown shale, T.D. 2,884 ft.

ORISKANY GAS FIELDS

Jackson County

Ripley district: Columbian Carbon 461 D. E. Anderson, 2,000,000 cu. ft. gas, Corniferous 4,923-5,032 ft., Oriskany 5,032-5,114 ft., gas 5,033-35 and 5,061-65 ft., T.D. 5,115 ft.

Kanawha County

Poca district: Godfrey L. Cabot 12 Putnam Co., 6,800,000 cu. ft. gas, Corniferous 5,100 ft., Oriskany 5,201 ft., T.D. 5,248 ft.
D. H. Stephenson et al 1 R. B. Baldwin, 1,254,000 cu. ft. gas.
Corniferous 4,712 ft., Oriskany 4,831 ft., T.D. 4,856½ ft.

NEW WORK

Boone County

Crook district: Pond Fork 2 W. E. Weekley, elev. 746.64 ft.
Scott district: Owens, Libby-Owens 23 Allen & Pryor, elev. 1,034 ft.

Braxton County

Birch district: Pittsburgh & W. Va. 7772 Fred L. Fox, elev. 915 ft.
Otter district: Pittsburgh & W. Va. 7769 O. J. Brown, elev. 1,284 ft.
Salt Lick district: Decker Drilling Co. 2 Albert Shock, elev. 1,132 ft.

Cabell County

Barboursville district: G. L. Meabor 1 Floyd Alberts, elev. 650 ft.

Jackson County

Ripley district: United Fuel Gas 1 S. R. Miller.
Spartan Gas Co. 1 S. L. Clendenin, elev. 701 ft.
Washington district: Columbian Carbon 1 W. D. Kiser, elev. 806.5 ft.

Kanawha County

Poca district: United Carbon 1 Dock Haynes.
West Va. Gas 1 L. H. Harrison, elev. 686.9 ft.
South Penn 2 Lincoln Dodd, elev. 874.58 ft.

Putnam County

Curry district: Summit Gas & Dev. Co. 1 G. E. Paul, elev. 570 ft.
E. J. Elkins 1 D. A. Mercer, elev. 850 ft.

Wayne County

Union district: West Va. Gas 2 Wayne Co. Poor Farm, elev. 585.24 ft.
Southern W. Va. O. & G. 2 A. W. Preston, elev. 775 ft.

Wetzel County

Church district: Null & Moorhead 5 fee, elev. 1,243 ft.

California Fields

(Continued from Page 87)

COASTAL DISTRICT WILDCATS

Capitan District

Milburn & Hamilton 1 Rutherford.....36-5n-31w
Drilling 1,498 ft. in Vaqueros sand and shale.

Cat Canyon District

Union 11 Bell.....27-9n-33w
Drilling ahead 5,764 ft. in sandy shale. Santa Barbara County.

Coal Oil Point District

Bolsa Chica 191-7 Permit.....25-4n-29w
Drilling 3,880 ft., in sand and shale, will abandon. Santa Barbara County.

Huasna District

Harvey Oil Corp. 1 Huasna.....11-32s-14e
Drilling 3,881 ft. in sand and shale. Formation test 3,535-3,715 ft. open 1 hour, 30 minutes recovered 950 ft. of gas-cut mud and trace of 20-gravity oil. Test at 3,712-3,881 ft. open 2 hours recovered 1,800 ft. gas-cut mud, 900-lb. bottom-hole pressure. San Luis Obispo County.

South Mountain District

Cal. Sec. 1 S.M.....17-3n-20w
T.D. 4,501 ft., P.B. 2,600 ft., swabbing, Ventura County.

Illinois Fields

(Continued from Page 90)

Patton-Cary 1 Reeves heirs.....SW NW SE 28-3s-14w
Cypress sand 2,550-62 ft. and 2,598-2,614 ft., Benoist 2,760-77 ft., casing to 2,598 ft.
Shenhauser & Brenton 1 C. Shrevers NE SW NE 4-3s-8e
Drilling 2,485 ft.

Woodford County

Morton O. & G. 1 J. E. Roche.....SE SE NE 18-25n-1e
Drilling 1,095 ft., 8-in. 747 ft., 6-in. 1,554 ft., Burlington 747 ft., Devonian 1,055 ft., T.D. 1,615 ft.

Indiana's Activity Centered in Griffin and Vincennes Areas

By STAFF CORRESPONDENT

EVANSVILLE, Ind., Nov. 25. — Indiana activity dropped back to normal this week as five oil wells, two gassers, and five dry holes were completed. The total initial production for the five oil wells was 805 bbl., or 161 bbl. per well. Posey County led in activity with four completions, while the only completion in the new Vincennes field, Dee Miller 1 Sanneman, in NE NE SW 24-2n-11w, was a 212-bbl. producer. The remaining completions were in various scattered counties.

Of the 87 wells carried in current drilling reports, 18 are locations, 12 are rigs, 15 are drilling, 35 are shut down, and 7 are in various stages of completion.

INDIANA COMPLETIONS

Daviess County

J. W. Cannon 4 Evans.....NE SE NE 8-2n-5w
Pumped 20 bbl., natural, sand 594-608 ft., T.D. 608 ft.

Gibson County

Papoose 15 Cooper-A.....NW SW SW 13-3s-14w
Pumped and flowed 250 bbl., natural, Ste. Genevieve 2,780 ft., pay 2,840-68 ft., T.D. 2,868 ft.

Greene County

Frank Young 1 Shepherd.....NE NE NW 6-6n-5w
Dry, Devonian 1,700 ft., T.D. 1,780 ft.

Jackson County

J. W. Pearson et al 1 Turhorn... SW NE SW 6-4n-5e
Rig abandoned.

Knox County

Dee Miller 1 Sanneman ..... NE NE SW 24-2n-11w
Pumped 212 bbl., shot, T.D. 1,895 ft.

Posey County

R. B. Creager et al 1 Reis.....SE SW NE 1-7s-12w
Pumped 73 bbl., 40-qt. shot, 1,766-77 ft., T.D. 1,780 ft.
H. G. Lewis et al 1 Wolfe.....SW NE SE 25-7s-15w
Dry, T.D. 2,744 ft.
W. C. McBride 5 Swanders.....NW NW NE 4-4s-14w
Pumped 250 bbl., 15-qt. shot, 2,787-2,802 ft., 20-qt. shot, 2,784-98 ft., T.D. 2,914 ft., P.B. to 2,798 ft.
Somers & Egan 8 Keck.....SW NE NE 34-3s-14w
Location abandoned.

Spencer County

H. M. Hunt et al 1 Lusk ..... SE SE SE 32-7s-6w
433,000 cu. ft. gas, sand 603-17 ft., T.D. 617 ft.
C. E. Dice 5 Grass.....SE SE SE 2-6s-4w
Dry, lime 440 ft., sand 485-89 ft., lime 517 ft., T.D. 615 ft.

Sullivan County

S. E. Bailey 1 Wible.....NE NE NW 36-8n-11w
500,000 cu. ft. gas, pay 576-86 ft., 312-39 ft., T.D. 877 ft., P.B. to 588 ft.
O. A. Thayer 1 Wilson.....NE NE SE 23-8n-10w
Dry, sand 810-15 ft., water, T.D. 825 ft.

INDIANA DRILLING REPORT

Crawford County

J. C. Barnett 1 Baylor.....SE SE SW 22-1s-2e
Location.

Daviess County

Newton P. L. 1 Brittain.....NE NE SW 15-1n-5w
Drilling 2,571 ft.

Decatur County

Hoosier Pub. Util. 218 Schoettmer.. NW SW 14-9n-9e
Location.
Hoosier Pub. Util. 217 Schoettmer....SE NE 14-9n-9e
Location.

Elkhart County

A. W. Downs 1 Harmon.....NE NE SE 11-38n-4e
Location.

Gibson County

Hyslop et al 1 fee .....NW NE NW 20-1s-9w
Rigging up machine.
P. W. Harr et al 1 Weber.....NE NE SW 32-2s-9w
Drilling 1,547 ft.
Loma Oil et al 1 Brady.....NE NE SW 14-2s-12w
Glen Dean 1,839 ft., show oil 2,177-86 ft., drilling 2,186 ft.
Cherry & Kidd et al 1 Hall .... SW NW SW 31-2s-12w
Glen Dean 2,091 ft., Barlow 2,304 ft., Cypress 2,321-42 ft., water, drilling 2,368 ft.
Newton P. L. 1 Prud. Life Ins.. NE NE NE 35-1s-10w
Rig.

Greene County

L. B. Jackson et al 1 Holmes..NW NW NW 22-7n-6w
Drilling 892 ft.

Hamilton County

N. N. Smith 1 Pedigo.....NE NE 28-18n-3e
Rig.

Harrison County

Halbert & Schacklette 1 Wiseman SW SW NE 25-5s-3e
Location.
Ind. Util. Corp. 1 Conrad ..... SE SE NW 32-3s-4e
Location.
Ind. Util. Corp. 1 Wheat ..... NW NE SE 32-3s-4e
Location.

Huntington County

Beauchamp 1 Mayer Grain.....SE NW SW 22-29n-8e
Rig.

Jay County

Ellen Burke 2 Outclop.....SW NW SW 24-22n-14e
Rig.
T. C. Weaver 1 Addington.....SE NE NE 35-24n-12e
Rig.

Knox County

W. C. McBride 1 Brevoort .....SW NE NW 1-2n-11w
Golconda 1,507 ft., Renault 1,775 ft., Ste. Genevieve 1,788 ft., show oil 1,820-40 ft. and 1,872-75 ft., drilling 1,962 ft.
W. C. McBride 1 Schaller.....SE SE SE 23-2n-11w
Location.
W. C. McBride 2 Met. Life Ins. SW SW NE 24-2n-11w
Glen Dean 1,434 ft., Renault 1,775 ft., Ste. Genevieve 1,791 ft., Fredonia 1,826 ft., McClosky 1,888-91 ft. and 1,895-98 ft., set removable pipe 1,742-62 ft., set 7-in. 1,885 ft., T.D. 1,901 ft., waiting on cement.

Martin County

Collier & Burton 1 Swayze.....NW NE NE 10-3n-4w
Drilling 420 ft.

Monroe County

Terry Deskins 1 Carey.....NW NW SE 5-9n-1e
Location.
Terry Deskins 1 Thompson.....NE NW SE 18-9n-1e
Location.

Newton County

Nat. Consumers Oil 1 Tyler.....NE NE NW 4-31n-8w
Rig.
Vaughn & Smith 1 Boyle .... NE NW NE 5-31n-8w
Drilling 1,120 ft.

Orange County

United States Oil 1 G. E. Willyard NW NE SW 33-1n-1w
Location.

Posey County

Ill. Prod. et al 1 Larkin.....NE NE SW 17-6s-14w
Rig.

Ripley County

O. Hughes 1 fee.....NW NW SW 4-8n-10e
Location.

Spencer County

J. C. Ellis et al 1 Spence.....NW SE 29-7s-6w
Location.
Jim Ellis et al 1 Fisher .... E½ SW NE 29-7s-6w
Underreaming casing, T.D. 1,502 ft.

Stark County

J. L. Black et al 1 Kennedy... NW SW NE 26-33n-2w
Location.

Steuben County

C. C. Goff 1 Robertson.....SE SE SE 25-36n-13e
Rig.

OHIO FIELDS

NEWARK, Ohio, Nov. 25.—Noble County test yields a small gas showing in the first streak of Clinton; the Medina was dry. Barnsville Development Co. 1 O. E. Heizler in Center Township, Section 24, had 44,000 cu. ft. gas in the first streak of Clinton, 5,598-5,604 ft., second Clinton streak 5,621-89 ft., was hard and dry; Medina 5,744-56 ft., dry, Total depth 5,800 ft. The gas showing in the first Clinton will be shot.

McCloy, Inc., in Jersey Township, Licking County, on the N. A. Rowe test, is drilling ahead at 3,710 ft., 314 ft. in the Trenton.

The deep test of the Natural Gas Co. of West Virginia on the E. A. Mobley farm in Section 19, Smith Township, Belmont County, which is being drilled to the Clinton sand, is drilling at 5,960 ft.

In Perry County, a 125-bbl. oil well was completed in the Clayton pool. Lorain County reports the only gasser gaging better than 1,000,000 cu. ft. Of the 20 completions, 11 were gas wells, 6 were oil wells and 3 were dry holes.

Ashland County

Lake Township: Lyons & Stewart 1 D. G. Chandler, Sec. 10, 500,000 cu. ft. gas, shot, Clinton, T.D. 3,095 ft.

Athens County

Ames Township: Carpenter et al 30 John Smith, Sec. 13, dry, first Cow Run, T.D. 336 ft.
Lodi Township: Townsend 2 Fred Carsey, Sec. 17, 55,000 cu. ft. gas, shot, second Berea, T.D. 1,680 ft.
Rome Township: Gibson et al 9 Wells Van Dyke, Sec. 30, 30 bbl., shot, first Cow Run, T.D. 436 ft.

Guernsey County

Adams Township: Ronshausen 2 O. C. Ford, Sec. 21, 1 bbl. and 40,000 cu. ft. gas, shot, Berea, T.D. 1,085 ft.
Millwood Township: Roy Earley et al 1 Charles Roe, Sec. 9, 2 bbl., shot, plugged, Berea, T.D. 1,335 ft.

Lawrence County

Union Township: Star Gas 1 T. J. Templeton, Sec. 8, 100,000 cu. ft. gas, shot, Ohio shales, T.D. 2,850 ft.

Licking County

Mary Ann Township: C. A. Davis 1 W. H. Weakley, Lot 15, 219,000 cu. ft. gas, Clinton, T.D. 2,626 ft.
Newark Township: Everett Co. 1 Mound Mortgage Loan Co., 554,000 cu. ft. gas, Clinton, T.D. 2,403 ft.
Ohio Fuel 2 Guy Watkins, Lot 7, second quarter, 150,000 cu. ft. gas, Clinton, T.D. 2,357 ft.
Ohio Fuel 2 W. W. Long, Lot 22, dry hole, Clinton, T.D. 2,440 ft.

Lorain County

Grafton Township: Ohio Fuel 1 George Wise, Lot 46, 60,000 cu. ft. gas, Clinton, T.D. 2,647 ft.
Penfield Township: Wiser 1 Ray Bachelior, Lot 17, Sec. 2, 1,500,000 cu. ft. gas, Clinton, T.D. 2,451 ft.

Medina County

York Township: Adair 1 P. J. Wilbur, Lot 12, Tract 4, 5 bbl., shot, Berea, T.D. 407 ft.

Meigs County

Lebanon Township: Proffitt et al 1 J. M. Wells, Sec. 21, 130,000 cu. ft. gas, Berea, T.D. 1,980 ft.

Muskingum County

Harrison Township: Gas Producing Co. 1 Zdle Campbell, Sec. 6, 35 bbl., shot, Medina, Clinton dry, T.D. 4,267 ft.
Newton Township: Ohio Fuel 1 Emma Ford, Sec. 11, 350,000 cu. ft. gas, shot, Clinton, T.D. 3,440 ft.

Noble County

Elk Township: Metcalf 7 F. J. Springer, Sec. 28, 3 bbl., shot, Germantown, T.D. 1,061 ft.

Perry County

Clayton Township: Palm Oil 1 New Perry Coal Co., Sec. 9, 125 bbl., shot, Clinton, T.D. 3,379 ft.

Stark County

Pike Township: Lyons et al 2 O. C. Barber Endowment Co., Sec. 10, 2 bbl., and 100,000 cu. ft. gas, shot, Clinton, T.D. 4,845 ft.

WESTERN KENTUCKY

OWENSBORO, Ky., Nov. 25.—Four oil wells and two dry holes were completed in western Kentucky during the past week. The best wells for some weeks were Petroleum Co. 3 Ed Howard, in the Utica district of Daviess County, which made 400 bbl. after acidization from the McClosky at 1,680-92 ft. and Ohio 1 Lee Murray, in the Glenville district of McLean County, which made 500 bbl. from the McClosky at 1,719-31 ft. The latter is an old well drilled deeper, being one of a number of old Chester sand producers which are now being deepened.

Daviess County

Handyville district: Ohio 7 Steve Coombs, 10 bbl., 100-qt. shot, Jett sand 1,236-47 ft., T.D. 1,250 ft.
Staves Drilling Co. 9 L. I. Iglehart, dry through McClosky, T.D. 1,983 ft.
Teller 5 E. F. Lebold 45-A, dry through McClosky, T.D. 1,990 ft.
Utica district: Daugherty 7 C. W. Howard, 10 bbl., 20-qt. shot, Jones sand 1,230-51 ft., T.D. 1,266 ft.
Petroleum Co. 3 Ed Howard, 400 bbl., 3,000 gal. acid, McClosky 1,680-92 ft., T.D. 1,701 ft.
Hupp 3 C. H. Stevens, drilling 700 ft.
Petroleum Co. 3 L. N. Burns, moving in.

McLean County

Glenville district: Ohio 1 Lee Murry, 500 bbl., 4,000 gal. acid, McClosky 1,719-31 ft., old T.D. 1,420 ft.
Stewart & Snyder 2 A. Hansford, moving in.
Burt Cambron 1 J. F. Kerrick, rigging up to deepen to McClosky.
Ohio 5 George McManama, trustee, 2, rigging up to deepen to McClosky, old T.D. 1,358 ft.

Ohio County

Deanfield district: Globe 5 Ada Kelly heirs, 10 bbl., 40-qt. shot, Jones sand 537-52 ft., T.D. 554 ft.
Globe 6 Ada Kelly heirs, drilling at 575 ft.
Brenner 3 Joe Bellamy, drilling at 350 ft.

EASTERN KENTUCKY

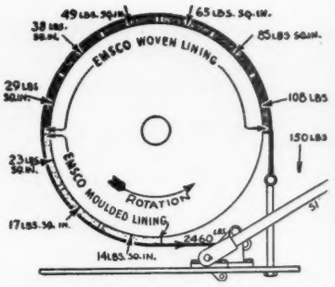
ASHLAND, Ky., Nov. 25.—One 25-bbl. oil well and two gas wells were completed in eastern Kentucky this week with the general trend of activities somewhat affected by the Thanksgiving holiday.

Eli Sparks 1 Board of Education, on Ross Creek in Lee County, total depth 930 ft., producing 25 bbl.

Kentucky-West Virginia Gas Co. 5273 W. J. Slone, on Caney Creek in Knott County, total depth 2,690 ft. in shale, 146,000 cu. ft. gas.

Kentucky-West Virginia Gas Co. 5271 William C. Elliott, on Pike Fork of Toler Creek, total depth 3,300 ft., 84,000 cu. ft. gas, in shale.

Word received here indicated that while a rotary rig may not be moved into eastern Kentucky immediately for drilling, a cable-tool outfit will probably start a deep test in Morgan County within the next 30 days. The operation is scheduled for the Bill Sweeney farm on Little Black Water Creek near Ezel. Sources here said the operator was planning to bring in a rotary outfit but at present it is busy in Illinois and may not be available when desiring to start the Ezel operation.



HOW "ENGINEERED" SETS WORK

BUILT on the scientific fact that braking pressure is not the same at each point on the band, Emsco "Engineered" Rotary gives you a combination, balanced braking action. For the pressures which are heaviest at the top of the band, you'll find the Woven linings especially adapted to heavy duty. Where pressures are lighter, the Moulded type is used, controlling abrasive action to prevent scoring. BOTH braking elements are specially developed to work as a lining unit. For this economy and efficiency—order Emsco "Engineered" today . . .

The combination of two types of lining on one band is an exclusive patented Emsco feature.

EMSCO "Engineered"
(PATENTED)
Rotary Brake Lining Sets
EMSCO ASBESTOS CO. • DOWNEY, CALIF.

"PRE-SOLD"
Wall
MANILA
OIL FIELD
CORDAGE
stands the gaff!
Complete stocks are carried in both mid-continent and gulf coast fields.
Wall Rope Works, Inc.
2000 Nance Street,
Houston, Texas
Telephone: Cap. 0244
WALL

NEW TESTING METHOD INSURES 100% UNIFORMITY ON MacCLATCHIE "MONEY-SAVERS"!

From end to end the finished bore on a MacClatchie Pump Liner is 100% uniform, *with no soft spots to cause pitting!*

That's because MacClatchie has perfected an entirely new and exclusive method of testing the entire inside surface of "Money-Saver" Liners before they're shipped. This test checks the entire liner surface after grinding and reveals any soft spot which would pit and cause premature wear.

Thus, when you use MacClatchie Liners in your slush pumps, you're assured of getting the same uniform *money-saving* service day after day and month after month! Order a set for your pumps today!

Write for Complete Details

MacCLATCHIE MANUFACTURING CO.
COMPTON, CALIFORNIA

Among the Drilling

T. A. CARLTON, Houston, Tex., opened production from a new sand on the north side of the Ogburn field, Harris County, Texas, as L. M. Josey 1 fee was flowing pipe-line oil while cleaning out from perforated casing at 7,020-24 ft.

LOFFLAND BROTHERS, Houston, Tex., are rigging up for a new test in the Thompson field, Fort Bend County, Texas. The well is 3 State, located in the Brazos River bed, and is scheduled to be drilled to 8,000 ft.

COASTAL Drilling Co., Houston, Tex., is preparing to spud in on the company's 1 J. E. Ransom, a projected 6,000-ft. wildcat located about 2½ miles northeast of the Sandy Point field in the C. S. Gorbett Survey, Brazoria County, Texas.

J. W. FRAZIER, Houston, Tex., completed another producer in the Dyersdale field, Harris County, Texas, for H. C. Cockburn, and the rotary has been moved to a new location for the same operator. In Calhoun County, Texas, north of Port Lavaca, drilling was started on 1 Stutzenbecker, a wildcat which is being drilled jointly with R. N. Ranger.

HELMERICH & PAYNE abandoned their wildcat in the Sugar Valley area, Matagorda County, Texas, and the rotary will be moved to Jackson County for a projected 6,500-ft. wildcat located in the Martin Survey.

MORRIS HAMILTON Drilling Co., Houston, Tex., opened crude production in the Weser gas field, Goliad County, Texas, with the completion of W. R. Davis 1 Albrecht, completed in the Cook Mountain sand at 5,246-52 ft., for an initial production of 97 bbl. daily through a $\frac{3}{16}$-in. choke. In Colorado County, Texas, W. R. Davis 1-A Brownson, a projected Wilcox test, is drilling below 9,300 ft.

TRINITY DRILLERS, Inc., San Antonio, Tex., opened the first commercial production in Willacy County, Texas, with the completion of Pan American Production Co. and Shell Oil Co., Inc. 1 Garcia, which flowed 263 bbl. of pipe-line oil from the Frio sand at 7,620-78 ft. The well is located about 5 miles south of Willamar.

HARRY L. EDWARDS Drilling Co., Houston, Tex., is preparing to test Gulfboard Oil Corp. 1-239 State, a wildcat located on the Mud Island prospect, offshore from Aransas County, Texas, in Aransas Bay. Casing was cemented on bottom at 9,257 ft., and several sand sections logged at intervals from 8,500 ft. will be tested. On the Esperson dome, Liberty County, Texas, another producer was completed on the east flank for W. P. Luse, and the rotary has been moved over to a new location.

J. D. CLAIR, San Antonio, Tex., received contract from the Duval Oil Corp. for 9 Hoffman, in the Hoffman field, Duval County, Texas, and the well is being completed after coring sand at 2,744-49 ft.

NICKLOS Drilling Co., Houston, Tex., received contract from the Texas Co. for another well to be drilled in the Horseshoe Bayou field, St. Mary Parish, Louisiana, and in the Ville Platte field, Evangeline Parish, Louisiana, a new operation is being started for Continental Oil Co. Two rotaries are being used on workover jobs in the Tepetate field for Continental Oil Co.

DELTA Drilling Co. has discovered a new gas field in North Louisiana. The company's 1 Dunn, western Caddo Parish wildcat near the town of Greenwood, blew out last week, making an estimated 25,000,000 cu. ft. of dry gas from what is believed to be the Ozan formation.

HOLCOMB & THOMASON, Shreveport drilling contractors, will drill the Turner & Smith 2 Panola Development Co., in the Carthage gas field of Panola County, East Texas. The test is a mile north of a dry hole drilled several months ago, and marks resumption of activity in the field.

JOHN COATS, drilling contractor of Gladewater, Tex., is moving in material on the J. D. Parsons 1 John Jackson in southwestern Marion County, Texas. The wildcat is located about 11 miles southwest of the town of Jefferson and is contracted to 5,000 ft.

LEONARD Drilling Co., Mount Pleasant, Mich., last week opened a new producing area 6 miles north of the Temple pool in Winterfield Township, Clare County, Michigan, when a wildcat being drilled for Rowmor Corp. and Danny Hughes flowed 353 bbl. on its first 12-hour test. The discovery, their 1 Wyman in 35-20n-6w, made the flow after being carried

CHIKSAN
All-Steel
ROTARY HOSE

Unlimited flexibility assured by 17 swivels, turning smoothly on double rows of hardened steel balls in flame-hardened races. All-steel construction does not deteriorate with age or climate. 3", 4" and 5" sizes. 45' to 60' lengths.

Distributed in Texas, Louisiana, Arkansas and New Mexico by GULF ENGINEERS, INC.
Distributed in Oklahoma and Kansas by WELL EQUIPMENT MFG. CO.

CHIKSAN TOOL COMPANY
BREA, CALIFORNIA
BALL BEARING SWING JOINTS for ALL PURPOSES
ALL-STEEL ROTARY HOSE
CIRCULATING HEADS • MUD GUNS
THREE-WAY DISC BIT
STANDARD AND HEAVY DUTY REAMERS

ARMSTRONG
STEAM TRAPS
make drilling engines work better!
ARMSTRONG MACHINE WORKS
368 Maple Street Three Rivers, Michigan

Standco
NO-SMOKE
USE STANDCO BRAKE LINING
—the drillers' best friend—drills more deep wells than all other linings combined. It makes an easy brake and feeds off evenly while drilling. See page 2304, Composite Catalog.
STANDCO BRAKE LINING CO
HOUSTON, TEXAS

Contractors

deeper and after acidization with 1,000 gal. Originally bottomed at 3,762 ft., 4½ ft. in the Dundee dolomite, it was carried to 3,772 ft. late last week with no apparent gain in production until after acidizing. A west offset to the discovery has been staked by Sun Oil Co.

JOHNSON-KEMNITZ Drilling Co., Oklahoma City, Okla., has been awarded contract for drilling of a wildcat south of the Knox field in Stephens County, Oklahoma. The test is the Gulf Oil Corp. 1 Krieger, in C E½ NE SW 3-2n-5w. At last reports the contractor was rigging up tools.

ZEPHYR Drilling Co., Tulsa, has completed erection of derrick and is moving in machinery for a wildcat 9 miles northwest of St. John in Stafford County, Kansas. The wildcat is the company's 1 H. E. Moon, in SE NW 30-22-13w.

STEARNS Drilling Co., Wichita, Kans., at its 1 Witt, a wildcat in Cowley County, Kansas, at the last of the week was drilling at 2,000 ft. Location of the test is 4 miles southwest of the Blue Hill pool in C S½ NE SW 28-12-16w.

RHODES Drilling Co. and A. R. Forster, Abilene, Tex., are drilling below 2,170 ft. at their 1-A N. M. George in Callahan County, West Central Texas, after lime shows at 2,139-47 ft. failed to respond to acid treatment. The wildcat is 4 miles east of Baird, in NW Section 75, B.O.A. Survey. The oil shows were found in the basal Palo Pinto lime, but they were cemented off when casing was set. After plug had been drilled and the section perforated, it was treated with 250 gal. of acid but failed to respond. Using standard tools, it is being carried deeper to complete a 2,700-ft. contract.

WATKINS Drilling Co., Fairfield, Ill., at last reports had plugged back to test a stray sand at 2,950 ft. at the Morrison et al 1 S. Kershaw, a wildcat being drilled in White County, Illinois. The test topped the Glen Dean at 2,563 ft., Cypress at 2,852 ft., show of oil in the Paint Creek stray at 2,926 ft., Aux Vases at 3,105 ft., Ste. Genevieve at 3,159 ft., McClosky at 3,204 ft. and was drilled to a total depth of 3,280 ft. Its location is SW NW NE 22-3s-10e.

UNION Drilling Co., Mount Pleasant, Mich., at the 1 Kidder being drilled for Sun Oil Co. in Rutland Township, Barry County, Michigan, last week was ordered to plug the hole. The 1 Kidder, in NW NW NW 8-3n-9w, topped the St. Peter at 4,960 ft., reportedly carrying some 38-gravity oil but lacking gas. It drilled 13 ft. of St. Peter sand and logged saturation in the Knox dolomite before picking up water at 4,991 ft. Hole was carried to 5,013 ft. where it was ordered plugged.

William Ensley, driller, and T. L. Owens, superintendent for Penrod Drilling Co., Dallas, Tex., at a well being drilled by that company in the Cotton Valley field of North Louisiana

Want to
STEP AHEAD?

Reading important oil books is the surest route to

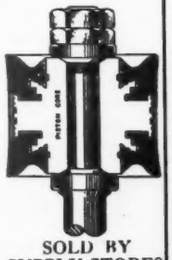
SUCCESS

For a FREE list of such oil books just address

THE OIL AND GAS JOURNAL

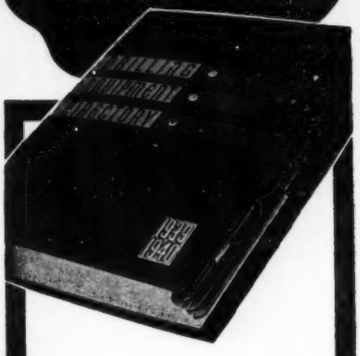
GATKE
DEEPWELL
WOVEN BRAKE LINING
The leader in sure action, easy feed-off, and low cost per ton mile.
GATKE CORPORATION
228 N. LaSalle St., CHICAGO

D & M PISTONS GIVE LONGER SERVICE
Highest quality electrically melted iron cores are constructed to give better support to the specially compounded rubber, graduated in hardness from center to each lip to give longest wear.



SOLD BY SUPPLY STORES EVERYWHERE
D&M MACHINE WORKS
TORRANCE, CALIF.
BRANCHES:
HOUSTON · OKLAHOMA CITY

HERE'S WHERE YOU'LL FIND THE ANSWERS!



★ Put this book to work for you. When you have a problem, turn first to your Directory. You will be more apt to find what you are looking for there than anywhere else.

A single reference may save you hundreds of dollars. Use the Drilling Equipment Directory—regularly!

Petroleum Directory Publishing Co.
211 South Cheyenne, Tulsa, Oklahoma

The
H. C. SMITH
T-39
wire line
CORE DRILL

HARD FORMATION CUTTER HEAD

SOFT FORMATION CUTTER HEAD

H. C. SMITH T-39 WIRE LINE CORE DRILL

Export Representative:
VAL R. WITTICH
30 Rockefeller Plaza, New York City

H C Smith Oil Tool Co.
GENERAL OFFICES AND PLANT
P. O. Box 431, Compton, Calif.

Seventeenth Test on Old Salt Dome Brings in Production

By F. L. SINGLETON

NEW ORLEANS, La., Nov. 25.—The Section 28 Salt dome, also known as Hager, St. Martin Parish was added to the list of producing fields in the Louisiana Gulf Coast district as Superior Oil Co. 1 Stuart on the north flank, flowed an estimated 3,000,000 cu. ft. of gas, and an unestimated amount of distillate while testing through a 10/64-in. choke. Tubing pressure was 3,500 lb., and casing pressure 300 lb. Drilled to a total depth of 9,675 ft., the hole was plugged back to 9,200 ft., and casing was perforated at intervals from 9,129-95 ft. The well has been killed and the company plans to set production packer at 9,155 ft., and install bottom-hole control equipment which will allow the well to be produced from above or below the packer.

This dome is one of the oldest in the district having been discovered in 1917 by Simms-Hager Oil Co. which found salt material at 1,250 ft. The area centers around Sections 28, 29, 32 and 33, 9s-7e, and the present test is the seventeenth well to be drilled, all of the earlier wells being dry. Exploration around the flanks of nonproductive salt structures has highlighted development in this district for the past two years, and several million barrels in new reserves have been added by this phase of development.

Paradis Field Test

One of the most interesting wells drilling in the district is W. P. Luse and J. P. McAdams 1 A. P. Peyregne, 2 miles south of the Paradis field, St. Charles Parish. At the close of the week the well was preparing to drill ahead from a depth of 8,730 ft., after making an electrical survey. While no shows were reported, the well is reported to be running structurally the same with Texas 2 Paradis on the northwest flank of the field. Paradis is generally considered one of the most prolific fields in the district, due to the multiple sands which have been found to over lie the structure, which is still in the early stages of development.

E. G. Bateman et al 1 W. P. Foster, a prospective pool opener located south of Franklin, St. Mary Parish, perforated casing at 10,402-18 ft., and a drill-stem test showed 15 lb., working pressure and recovered drilling mud with no show of oil. A second test at 10,419-425 ft., tested no gas pressure, and no recovery was made. The perforations were squeezed off and another test is being made. The sand section is the lowest of three sands which were logged by an electrical survey below 9,000 ft.

Deep Iowa Extension

The newly opened deep sand in the Iowa field, Calcasieu and Jefferson Davis parishes was extended a short distance to the north with the completion of Magnolia 15 Wait which flowed 840 bbl. per day through a ¼-in. choke. The well is bottomed at 8,234 ft. and was completed through perforated casing at 8,225-33 ft. On the extreme north flank, A. C. Glassell 1 J. A. Bowan was abandoned at a total depth of 9,287 ft. In the meantime five other wells are active, the deepest being Shell 32 Heyd which is drilling in shale below 9,215 ft. On the south flank, S. W. Richardson 1 Sweet Lake Land & Oil Co. is drilling in shale below 7,143 ft.

Shell 1 Parish School Board, which opened a new sand in the West Lake Verret field, St. Martin Parish, flowed 235 bbl. per day through a 13/64-in. choke, with tubing pressure 750 lb., and casing pressure 1,625 lb. The well was drilled to a total depth of 8,974 ft., and was completed through perforated casing at 7,468-82 ft.

West Hackberry Extension

A slight west extension to the West Hackberry field, Cameron Parish was indicated as Superior 5 Raymond Vincent is standing with 5½-in. casing cemented at 8,520 ft., and a production test is slated to be made at intervals from 7,925-8,015 ft. Another test scheduled to be made is Stanolind 22-B School Board, which topped the 9,800 ft. sand and 7-in. casing was cemented at 9,784 ft.

In the Neale field, Beauregard Parish, and located about 1½ miles west of production, Atlantic 1-C Rice Land & Lumber Co. failed to flow when tested through perforated casing 8,344-62 ft., and it is probable that this test defines the west limits of the Wilcox zone.

Superior 6 Schwing Lumber & Shingle Co. located in the Bayou Blue field, Iberville Parish is standing with 5½-in. casing cemented at 5,825 ft. and the company intends to test the 5,700 ft. sand opened several weeks ago by the company's 5 Schwing.

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

North Crowley field: Humble 3 Reiners, 796 bbl., ¼-in. choke, perf. casing 8,797-8,802 ft., T.D. 8,810 ft.

Beauregard Parish

Neale field: Atlantic 3 Musser-Davis Lumber Co., 208 bbl., ¼-in. choke, perf. casing 8,360-78 ft., T.D. 8,450 ft.

Evangeline Parish

Ville Platte field: Continental 6 Haas, 176 bbl., 3/16-in. choke, perf. casing 10,110-30 ft., T.D. 10,260 ft.

Continental 1 Tate, 223 bbl., 3/16-in. choke, perf. casing 10,088-108 ft., T.D. 10,174 ft.

Continental 4 Vidrene, 95 bbl., 3/16-in. choke, perf. casing 10,110-123 ft., T.D. 10,255 ft.

Calcasieu Parish

Wildcat: Hamman Oil and Refining Co. 1 Hoffpauir, dry, T.D. 9,100 ft.

Cameron Parish

Wildcat: Danciger Oil and Refining Co. 1 Mallett Bay Land Co., dry, T.D. 9,503 ft.

Iberia Parish

Fausse Point field: Sun 7 Kling-Wallet, dry, T.D. 1,464 ft.

Iberville Parish

Bayou Blue field: Markley et al 6 Baiste Cooperage & Lumber Co., 158 bbl., ¼-in. choke, T.D. 1,578 ft.

La Fourche Parish

Chacahoula field: Sun 2 Williams, 15 bbl., distillate, 3/16-in. choke, perf. casing 9,330-60 ft., T.D. 9,569 ft.

Leeville field: Texas 76 Leeville, 267 bbl., 3/16-in. choke, perf. casing 7,920-60 ft., T.D. 8,778 ft.

Orleans Parish

Wildcat: W. T. Burton 3 State-Lake Catherine, dry, T.D. 9,875 ft.

St. James Parish

LaPice field: Shell 1 Federal Land Bank, 288 bbl., various chokes, perf. casing 7,646–52 ft., T.D. 10,900 ft.

St. Martin Parish

Anse La Butte field: Glassell & Glassell 3 Moresi, 223 bbl., 10/64-in. choke, top sand 4,631 ft., T.D. 4,662 ft.

West Lake Verret field: Shell 1 Parish School Board, 235 bbl., 13/64-in. choke, perf. casing 7,468-82 ft., T. D. 8,974 ft.

St. Mary Parish

Charenton field: Failing Exploration Co. 3 Viguerie, dry, T.D. 1,140 ft.

Plaquemines Parish

Garden Island field: Texas 49 State, 151 bbl., 5/32-in. choke, perf. casing 5,020-70 ft., T.D. 5,519 ft.

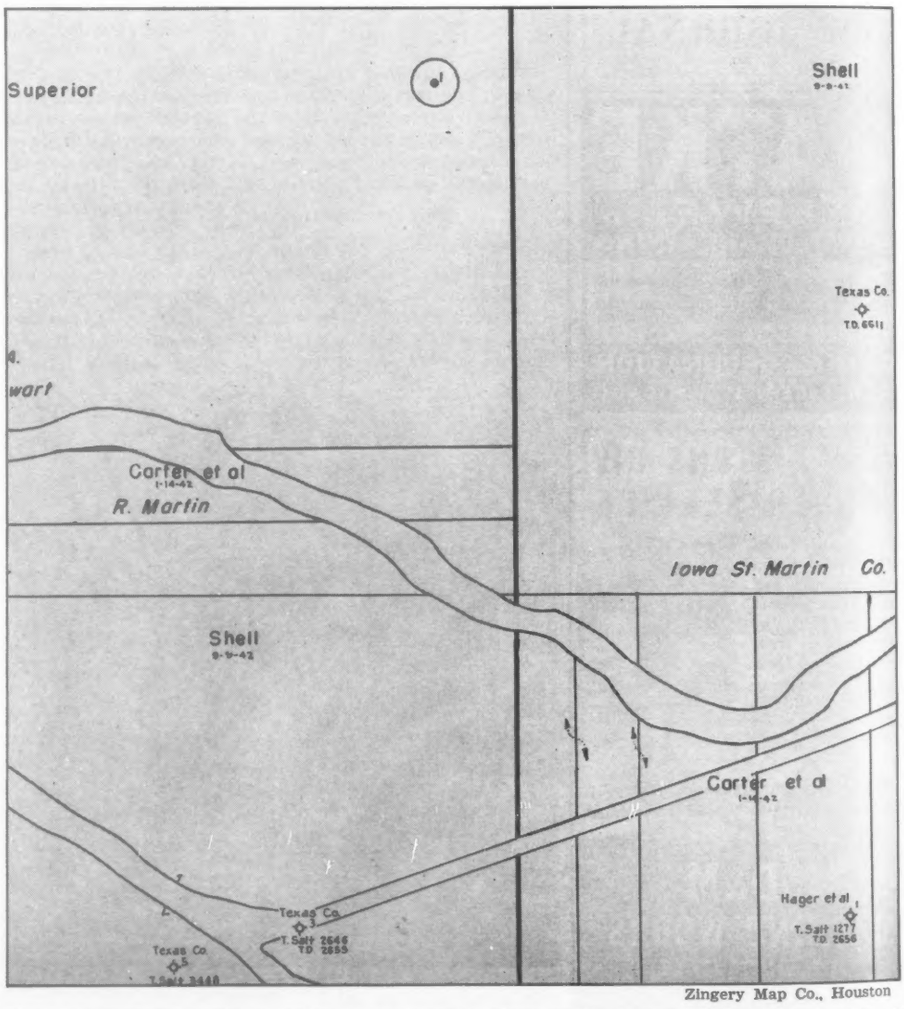
Terrebonne Parish

Bay St. Elaine field: Jefferson Lake Sulphur Co. 5 Salt Dome Royalties, dry, T.D. 1,113 ft.

Caillou Island field: Texas 69 State, dry, T.D. 6,807 ft.

Dog Lake field: Texas 12 State, 209 bbl., 10/64-in. choke, perf. casing 7,640-80 ft., T.D. 7,802 ft.

(Continued on Page 102)



Zingery Map Co., Houston

Plat of the northwest quarter of Section 28, salt dome St. Martin Parish, showing location of Superior 1 Stuart which opens first production on extreme north flank of structure

Tensleep Provides Good Wells In Lost Soldier and Mahoney

By T. R. INGRAM

DENVER, Colo., Nov. 25.—The open season for deer hunters, Thanksgiving Day and cold weather combined to curtail operations in the Rocky Mountain area. There were 10 completions, of which three were dry holes.

Colorado had one completion, McElmo 1 West in Montezuma County, drilling intermittently since 1932, was abandoned at 5,120 ft.

In Wyoming, Sinclair-Wyoming 3-F Mahoney, Mahoney dome, made 511 bbl. initial after deepening 19 ft. in the Tensleep. A. L. Freudenthal test in Blue Springs district encountered water at 698 ft. and was abandoned. Lance Creek had two completions in Ohio 8 Agnes Rohlff for 50 bbl. an hour in the upper Leo and Continental 21 Tom Bell for 240 bbl. in 24 hours. La Barge had a good completion in Marvey Oil 3 Government which flowed 175 bbl. in 24 hours. Sinclair-Wyoming No. 77-A, Lost Soldier, was deepened 195 ft. and recompleted for 840 bbl.

Cut Bank in Montana had three completions, Nyhagen-Sandgren 4 Anderson for 65 bbl., Dakota-Montana 1 Tribal-112 dry and abandoned, and Texas 9 Morrison for 133 bbl.

COLORADO

Archuleta County

Kendrick Dev. Co. 1 fee .....SE NE SW 36-35n-2w
T.D. 865 ft., fishing for bit.
California-Colorado Oil 2 Macht, NE SW NW 32-36n-1w
T.D. 1,081 ft., setting 10-in. to shut off thin water sand, small shows of gas in Mancos shale from 200 ft. to bottom.

Fremont County

U-Tex Oil 1 Hassler .....NE 28-20s-69w
S.D. temporarily at 2,500 ft.

Garfield County

Joe T. Juhan 1 Clough.....C NW SE 22-6s-94w
Drilling 506 ft. in Wasatch.

Huerfano County

Sideman-White 1-X Martinez.....C SW NE 33-26s-67w
Drilling ahead after landing 8¼-in. at 1,400 ft.
S. W. Pressey 4 Ojo.....NW NW NW 11-29s-69w
T.D. 670 ft., preparatory to plug back to sand at 105-33 ft., where it tested 2 bbl. a day.
Tompkins & Son 3 Tompkins....SW SW SW 2-29s-69w
Standing at 1,165 ft., sand at 210 ft. tested 2 bbl. black oil a day.
Ira E. Miller 1 Hamilton.....SE SE NW 20-29s-67w
Drilling 1,800 ft.
R. L. Jewett 1 Valdez.....SE NE 30-28s-67w
T.D. 450 ft., running 12½-in. to set on top of sand at 440 ft. in which show of oil reported.

Las Animas County

H. G. Stevenson 1 Dutto-Marchiso.....NW 32-33s-62w
Spudded to go to gas sand at around 1,800 ft. First report. Garcia district.

La Plata County

E. B. Klem 1 Obert.....NW SW 9-35n-12w
Drilling 3,915 ft. Objective Shinarump.
Nick Spatter 1-X Bryce .....SW SW 31-33n-9w
Cmtd. off caves at 4,390 ft.

Larimer County

E. P. Gallup 1 Hanson.....C SE NW 36-10n-71w
T.D. 165 ft., small show gas, trying to shut off water with 10-in.

Logan County

West Plains 1 Sheldon.....SE NW SW 3-10n-55w
Drilling 3,240 ft.

Moffat County

Steamboat Springs Synd. 1 Sutton, NE NE SW 1-5n-69w
S.D. 2,335 ft. in sand, to run pipe.
Mountain Fuel Supply 6-B Wilson, NE SE 14-12n-100w
T.D. 4,007 ft., P.B. to 3,550 ft. and cleaning out to test at 3,475-3,512 ft.

Montezuma County

McElmo Oil Co. 1 West (Coon & Teague), NE NW NE 31-36n-17w, McElmo district, has been plugged and abandoned at 5,120 ft., corrected depth. Well was started in 1932 to test the Pennsylvanian. At 3,131 ft. it had 1,200 ft. of oil in the hole from porous gray lime, with 1,400 ft. of open hole which was caving. At 3,830 ft. it showed for 3 bbl. a day 45-gravity oil. It went into salt at 4,350 ft. Top of Pennsylvanian was believed to have been at 3,105 ft. Several changes in operators and other factors make record of formation indefinite. However, it was generally agreed that at one time it looked like a discovery, but condition of hole was such that no satisfactory test was made.

Park County

South Park Oil I Lamar.....NE NE SE 34-11s-75w
Drilling 7,535 ft. in sand.

Rio Blanco County

In report last week on completion of Texas-California 4 Unit on Wilson Creek official production was given as 442 bbl. in 24 hours through the tubing. This initial output was through a ⅝-in. choke on the tubing.

Texas-California 5 Unit.....NW NE NE 34-3n-94w
Drilling 606 ft. after setting 20-in. surface pipe.
Raven O. & R. 31 Government, SW NW NE 32-2n-102w
Drilling 1,200 ft.
Buford Oil 1 Government.....SW SW 16-1n-91w
T.D. 4,387 ft., underreaming 6⅝-in. at 4,175 ft.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard.....SE NW 24-51n-93w
Drilling 960 ft.

Carbon County

Sinclair-Wyoming 3-F Mahoney, C SE NW 34-26n-88w. Mahoney dome, completed in the Tensleep at 4,486 ft. in 1938 for 172 bbl. natural, was recompleted at 4,505 ft. for 511 bbl. initial in the lower Tensleep.

Sinclair-Wyoming 16-A Wertz..SW SW SW 6-26n-89w
Drilling 3,969 ft.
Ohio 2 Lundy.....SE NE NW 34-20n-78w
Drilling 2,460 ft.
Sinclair-Wyoming 15-A Wertz..SW SW NE 7-26n-89w
T.D. 2,701 ft., cemented 10¾-in. at 490 ft.

Converse County

U. & I. Oil 1 Beaver.....SE NW 29-35n-68w
Resumed at 1,000 ft., preparatory to cement 10-in. at 920 ft.

Crook County

M. D. Miller 1 Commercial.....SW SE 19-49n-66w
Rigging up cable tools.
Vickers-Continental 1 Duncan-Lobban .....
NE NW SW 28-57n-64w
Drilling 1,980 ft., hole full of water.

Hot Springs County

A. L. and Fred Freudenthal No. 1, SE NE NW 31-43n-92w, Blue Springs district, had water in sand and was plugged and abandoned at 698 ft., total depth.

Lincoln County

Klumpe Synd. 1 .....SE SE SE 4-26n-113w
Drilling 1,000 ft.

Natrona County

General Pet. 37-22-P.....NW SE SW 22-35n-77w
Drilling 2,850 ft. in basal Mesa Verde.
Royal Oil Corp. 1 Midert.....SW SW SW 26-35n-80w
T.D. 1,555 ft., running 8-in. to 1,400 ft.
General Petroleum 57-16-S....NW SW SE 16-35n-77w
T.D. 4,570 ft., testing.

Niobrara County

Ohio Oil Co. 8 Agnes Rohlff, NW SW NE 32-36n-65w, Lance Creek field, was completed at 5,395 ft., total depth. for 50 bbl. an hour in the upper Leo sand, topped at 5,275 ft. The 7-in. was cemented at 5,395 ft. and perforated with 117 shots at 5,260-5,350 ft.

Continental Oil Co. 21 Tom Bell, NW SE NE 33-36n-65w, was completed at 5,335 ft., total depth, for 240 bbl. first 24 hours from the Leo sand topped at 5,290 ft. The 7-in. was cemented at 5,286 ft.

Continental 2-A Schuricht, C SE NE 6-35n-65w, completed in the Sundance at 3,872 ft., total depth, in 1935 for 2,441 bbl., is preparing to deepen to the Leo sand. It is a south offset to Argo 3-A Elliott recently deepened from the Sundance and recompleted in the Leo.

Minnelusa Oil Corp. 4 Joss.....SW NE SW 6-35n-65w
Drilling 2,250 ft., 13-in. cemented at 320 ft. First report.
Continental 2-A Schuricht.....C SE NE 6-35n-65w
T.D. 3,872 ft., preparing to deepen to Leo.
Continental 22 Tom Bell.....SE NW NW 34-36n-65w
Drilling 4,290 ft. in red beds.
Continental 23 Tom Bell..... SE NW SW 34-36n-65w
Drilling 4,728 ft. in lime, top red beds 4,050 ft.
Ohio 18 Lamb-Acct. 2.....SE SW NE 5-35n-65w
Drilling 4,125 ft.
Continental 20 Tom Bell.....NW SE SE 33-36n-65w
T.D. 5,490 ft., testing.
Argo 3 Elliott..... C NE NE 6-35n-65w
T.D. 5,316 ft., cemented 5½-in. at 5,313 ft., perf. with 72 holes at 4,954-84 ft., gas in upper Leo, perf. with 240 holes in lower Leo, testing.

Park County

Continental 2 Northern Pacific, NE NW NW 23-58n-98w
Drilling 2,034 ft.
Continental 4 Northern Pacific-1, SE NE SE 23-58n-98w
T.D. 3,150 ft., waiting on pump test.
Resolute 2 State.....SW SW 16-57n-101w
T.D. 10,121 ft., P.B. again to redrill Frontier sands.

Sublette County

The second sand in the La Barge field, in which some good wells have been completed in recent weeks, yielded one of the best completions of the year in the Marvel Oil Co. 5 Government, NE SE SE 28-27n-113w. It flowed 175 bbl. first 24 hours at 1,201 ft., total depth. The 7-in. was set at 1,042 ft.

North La Barge Oil 6 Government .....
CNL SE NE 28-27n-113w
Spudded.
Texas 1-I Government.....SW NW SW 27-27n-113w
Coring at 874 ft.

Sweetwater County

Sinclair-Wyoming No. 77-A, SE NE NE 10-26n-90w, Lost Soldier field, made 840 bbl. in 24 hours on official test at 4,285 ft., total depth, in the lower Tensleep after deepening from 4,090 ft., where it was completed in 1938 for 155 bbl. Top of Tensleep was at 3,989 ft. It is preparing to deepen its No. 78, which was completed in 1938 for 272 bbl. at 4,087 ft. after plugging back from 4,092 ft.

Sinclair-Wyoming No. 78.....SW SW NW 11-26n-90w
T.D. 4,087 ft., rigging to drill deeper.
Sinclair-Wyoming No. 97-A...NW NW SW 11-26n-90w
Location.
Gus Pongratz et al 1 Clark..... NW NE 22-19n-104w
S.D. 5,005 ft., moving in heavier equipment, top red beds 4,955 ft.
Red Desert Corp. 1 Aspden..NW SW NW 34-18n-103w
Drilling 6,125 ft. in hard chert.
Vermilion Oil 2 Government....SW SW SW 7-12n-99w
T.D. 3,535 ft., fishing.

Weston County

Osage Trust 1 fee, 3 miles east of the shallow pool in Osage field, has spudded in a deep test with rotary tools. The Muddy sand, producing horizon to the west, is at the surface and the base of the Minnelusa will be at around 1,300 ft.

Osage Trust 1 fee.....NW NE 14-46n-63w
Spudded and S.D. to rig rotary.
Al Jones No. 1.....NE NE NE 1-46n-64w
Spudded. First report.
C. L. Foster No. 1.....CEL SW SE 7-46n-63w
Drilling below 400 ft. First report.
Carl Kundy No. 5.....NE SW SW 29-46n-63w
Cemented 8¼-in. at 302 ft.
Riggs Oil 4 State.....CNL NE SE 16-46n-64w
Drilling below 2,400 ft. Wall Creek at 2,015-25 ft.
W. H. Connor 1 State.....NW SW NE 36-42n-61w
T.D. 982 ft., top Sundance 951 ft., 36 ft. oil in hole, will shoot and test.

MONTANA

Big Horn County

Massey Oil & Gas 1 Government..SE SW SE 11-2s-31e
Drilling 2,008 ft. in Dakota.

Blaine County

Cherry Ridge Synd. 1 Harbolt..NW NW SW 1-35n-20e
Landed 10-in. at 1,220 ft., for formation shutoff.
Montana Gas 1 Sias.....SE SE SW 4-31n-19e
Resumed drilling at 1,025 ft.

Fergus County

Hess & Tony 1 State.....CWL SW NE 36-22n-17e
Spudded.

Garfield County

H. H. Schwartz, Jr., 1 Charles....SE NW 21-15n-30e
S.D. 3,528 ft. in top Madison, will go to Devonian.

Glacier County

Cut Bank had three completions and no new operation.

Nyhagen-Sandgren 4 Anderson, NW NE SW 26-35n-6w, swabbed 65 bbl. the first 24 hours at 2,970 ft., total depth, from the Cut Bank sand at 2,815-65 ft. Main pay was at 2,855-65 ft. The Sunburst at 2,775-95 ft. had a show of oil which was cased off with the 7-in. at 2,849 ft.

Dakota-Montana 1 Tribal-112, SW NW NE 16-35n-6w, was dry in the upper Cut Bank at 3,015-43 ft. and had water in the lower Cut Bank at 3,043-70 ft. It was abandoned.

Texas Co. 9 Mabel Morrison, 660 ft. south of N¼ cor. 22-35n-6w, swabbed 133 bbl. the first 24 hours at 2,910 ft., total depth, from the Cut Bank sand at 2,860-2,900 ft. Main pay was at 2,885-2,900 ft.

Steel Creek Oil 4 Carmen.....SW SW NE 19-34n-5w
Rig on ground (formerly R. C. Tarrant).
Glacier Prod. Co. 3 Scheuren ..CNL NE SW 20-33n-5w
Cemented 10¾-in. at 610 ft., top Colorado 610 ft.

Only WEDGE THREAD PROTECTORS give you Maximum 4 Point protection

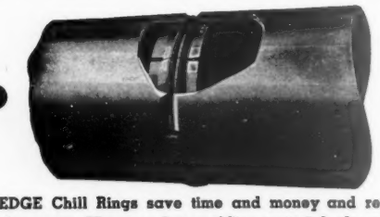
HERE THEY ARE

1 CLEARS CREST OF THREAD
2 LOCKS INSIDE OF PIPE
3 CLEARS FIRST FEW THREADS
4 HAVE SMOOTH ROLLED THREADS

Patent No. 2,156,169

No other Thread Protector can possibly give you the protection that WEDGE Thread Protectors give because only WEDGE has the patented features that provide 4-POINT PROTECTION. To eliminate the possibility of damaged threads in transit just specify WEDGE Thread Protectors on each order of pipe. By doing so your threads get the MAXIMUM 4-POINT PROTECTION that only WEDGE Thread Protectors can give.

Reduce Laying Costs



WEDGE Chill Rings save time and money and reduce laying costs. They use less welding material, also speed aligning, eliminate icicles, and assure perfect union. Your skilled help can lay the line faster with WEDGE Chill Rings.

Write for Prices and Specifications

WEDGE PROTECTORS, INC
9520 Richmond Ave., Cleveland, Ohio

use WEDGE Thread Protectors-Chill Rings

Complete Your Journal File!

Back copies of many issues are available. If issue is more than one year old, price 50c.

Address Circulation Dep't.

A. B. Cobb 2 Tribal-197 . . . . . SE SE NE 19-32n-5w
Spudded.
Consolidated Gas 1 Frary-Tribal NW NW SE 19-32n-5w
Location.
Texas 9 State . . . . . C NE NE 16-32n-5w
Spudded.
William Hanlon 3 Allocated-131 . SW SE NE 7-32n-5w
Drilling 950 ft., top Colorado 460 ft., set 10¾-in. at 500 ft.
Texas 6 Purdy . . . . . NW SW SE 35-35n-6w
Spudded.
Kately, Agent 3 Kramer . . . . . NE SE NW 15-34n-6w
Cemented 10¾-in. at 563 ft., top Colorado 540 ft.
Texas 2 Kneale . . . . . C NE NW 14-35n-6w
Spudded.

Stillwater County

Texas 1 Unit . . . . . SE NW 10-4s-19e
T.D. 7,116 ft., P.B. to 6,690 ft., and testing.

Toole County

Only 3 wells were active in Kevin-Sunburst, 11 wells being down on account of the weather. There were no completions.

Kevin Oil 4 Leach . . . . . C SE NE 31-35n-3w
T.D. 1,640 ft., running 7-in.
H. F. Patterson 2 Government . . . . . SE cor. 15-35n-3w
T.D. 1,868 ft., contact 1,831-36 ft., P.B. to 1,850 ft., to acidize.
C. L. Mills 2 Government . . . . . SE NE SE 8-35n-2w
T.D. 890 ft., running 8¼-in.

NORTHWEST NEW MEXICO

McKinley County

Ambrosia Investors Co., Inc. 1 Govt. SE SE 11-14n-10w
T.D. 1,362 ft. in red limey shale, some water, 10-in. at 928 ft.

Rio Arriba County

E. B. McKenna 1 Govt.-Rath . . . . . NW 29-26n-2e
Drilling 300 ft.

San Juan County

Red Cactus Oil 1 Tribal . . . . . SE cor. 35-29n-18w
Drilling 850 ft.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e
Recementing 8¼-in. at 2,635 ft.

Torrance County

J. P. Stewart 1 Laman . . . . . C NW NE 3-3n-12e
T.D. 541 ft., underreaming 10-in. for water shutoff.

UTAH

Box Elder County

Northern Oil 1 . . . . . NE SW 17-13n-4w
Resumed at 386 ft. and drilling ahead at 475 ft.

Summit County

Longwell Pet. Co. 1 . . . . . SE SW SE 35-3n-5e
Drilling 3,478 ft. in brown limy shale, small show gas with oil colors, 4¾-in. at 3,469 ft.

Kansas Fields

(Continued from Page 83)

9-15-13w, pumped 802 bbl. in 8 hr., 5,000 gal. acid, Lansing 3,060-88 ft., T.D. 3,317 ft.
Trapp pool: Cities Service 2-B Eichman, C S½ SW SW 26-15-14w, depthograph potential 988 bbl., Arbuckle 3,360-66 ft., T.D.
Hall pool: R. H. Shields 2 Miller ,SE SE 31-14-13w, tested 80 bbl. at 2.894 ft
Coralena Oil 3 Finney, CNL NE NE 30-14-13w, 434 bbl., Kansas City 2,919 ft.

Stafford County

Jordan pool: Cities Service 2 Neiland B, NE SE 16-25-14w, made 62 bbl. at 5,828 ft.
Sittner pool: Helmerich & Payne 2 Krug CEL NW SW 2-22-12w, 165 bbl., Arbuckle 3,614 ft.
Zenith pool: Shell 3 Brown NE NW SW 2-24-11w, 2,340 bbl., Viola, T.D. 3,762 ft.
Skelly 4 McNickle, C N½ NW SE 2-24-11w, flowed 200 bbl. in 1½ hr., with 2,400,000 cu. ft. gas daily, Viola 3,668-3,738 ft., T.D. 8,000 gal. acid.

Woodson County

Winterschied pool: Barbara Oil 8 Shaffer, NW SW SE 31-23-14, pumped 40 bbl. oil and 80 bbl. water, Mississippi lime 1,752-53 ft., old well deepened from 1,581 ft. to 1,755 ft.
Nye & Kilby 7 Schaffer, C S½ SE SW 31-23-14, pumped 6 bbl. oil, Bartlesville 1,542-95 ft., T.D. 1,771 ft.

KANSAS DRILLING REPORT

Barber County

Barbara Oil 1-A Angell . . . . . C NE SE 10-33-14w
Basal sand 5,212 ft., Arbuckle 5,290-91 ft., T.D., hole full of water, to plug back.

Barton County

Shell 1 Homolka . . . . . NE NE SE 24-16-11w
Topeka 2,693 ft., Lansing 3,071 ft., Sooy 3,635 ft., coring 3,430 ft.
Owens et al 1 Burmeister . . . . . C S½ SE NW 20-17-11w
Topeka 2,745 ft., drilling 2,985 ft.

Cowley County

Wakefield et al 1 Durham . . . . S W½ NW SE 34-30-3
Cleaning out 1,835 ft.

Edwards County

McKnab et al 1 Minet . . . . . C SW SW 15-25-17w
Lansing 3,982 ft., Sooy 4,497 ft., Mississipi lime 4,499 ft., Kinderhook 4,534 ft., Miesner 4,575 ft., Viola 4,597 ft., Arbuckle 4,884 ft., T.D. 5,010 ft., no show.

Ellis County

Stearns Drlg. 1 Witt . . . . . C S½ NE SW 28-12-16w
Drilling 2,035 ft.

Greenwood County

Ward McGinnis 1 Sharp . . . . . C SW SW 9-28 12
Drilling 1,855 ft.

Marion County

Harrington et al 1 Belton . . . . . SE NE 30-17-4e
Tested 70 bbl. oil and 400 bbl. water at 2,415 ft., P.B. to 2,414 ft., pumped 15 bbl. oil and 300 bbl. water, testing.

Pottawatomie County

Olson & McCole 1 Anderson . . . . . NW SW NW 1-8-7
Lansing 930 ft., drilling 1,010 ft.

Rice County

Hess et al 1 Cole . . . . . SE SE NE 31-20-6w
Fort Riley 1,245 ft., Topeka 2,375 ft., underreaming 6-in. 2,790 ft.

Rooks County

Palmer Oil 1 Denio . . . . . C E½ SW NE 17-8-16w
Topeka 2,720 ft., Lansing 2,995 ft., show oil 3,004-07 ft. drilling 3,250 ft.

Russell County

Pryor & Lockhart 1 Borrell . . . . . C N½ NE SE 3-15-11w
Drilling 2,370 ft.
Braden & McClure 1 Phillip . . . . . N C½ NW SE 34-15-11w
Drilling below 2,690 ft.

Stafford County

Bradley Bros. 1-A Davis . . . . . C W½ SW SW 32-23-12w
Show oil 3,857 ft., drilling 3,868 ft.

Sumner County

Shawver & Carter Oil 1 Knowlton C W½ NW SE 6-33-2
Kansas City 2,890 ft., Mississippi lime 3,413 ft., show oil 3,433 ft., drilling 3,613 ft.

Thomas County

Billings et al 1-A Ryan . . . . . C E½ NE SE 27-8-32w
Dakota 1,595 ft., drilling 2,500 ft.

Norton County

H. A. Steele 1 Becker . . . . . SW NW 25-4s-21w
Fort Hayes 334 ft., set 7-in. at 1,125 ft., S.D. 1,234 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo., Nov. 25.—Skelly Oil Co. brought in producer No. 25 of the Falls City pool in Richardson County, Nebraska, and No. 27 for the county at large with its 3 Davisson in SE NW NE 20-1n-16e, Hunton, topped at 2,242 ft. and drilled to 2,268 ft., was acidized with 1,000 gal. and the well was swabbed at the rate of 350 bbl. daily. The company is moving tools to 3 Wallraff, SE NW SE 20-1n-16e. Its 1 Prichard in C SE NE 29-1n-16e, has been shut down until spring. Drill pipe stuck at 2,560 ft. and was shot off, after which the well was deepened to 2,880 ft. Hunton, topped at 2,365 ft., was dry.

Not much else was going on in Richardson County. Liberty Development Co., a syndicate from St. Joseph, announced location in the county for 1 William C. Fehr in NW SE 31-2n-16e.

Dry Hole in Nemaha County

Nemaha County, Nebraska, had another dry hole. Raymond Pulliam and Clifton Gall abandoned 1 Lawrence in SE SE SE 34-5n-15e, after topping Hunton lime at 2,500 ft. and drilling in some 18 ft. Jock Garden of Hutchinson, Kans., took over a test started November 19 by Jackson & Rust in Nemaha County. It is 1 Shaffer in SE SE 19-4n-16e. A rotary is being rigged up. The test was spudded with a machine.

Shallow Granite Found in Pawnee

Pawnee County, Nebraska, had granite at shallow depths for the Black Gold 1 Barnhardt near Steinauer in NW NE 31-3n-11e. Top of the granite wash was 675 ft. Total depth was 735 ft. The well was dry and abandoned.

Atchison County, Missouri, had a test rigging up to spud. Jackson & Rust will drill 1 June Hays in C NE NE 22-66n-42w. American Oil & Gas Co. 1 Thompson in SW SW 30-58n-31w, De Kalb County, Missouri, topped Arbuckle at 2,215 ft., shut down momentarily when water was encountered at 2,250 ft., and then proceeded to drill ahead. In Holt County, Missouri, Jerome Flory and James Kilby resumed work on 1 Meyer in SE NE NW 27-62n-39w. Surface casing is to be run again, the first having collapsed.

NEBRASKA COMPLETION

Richardson County

Falls City area: Guy Scott et al 1 Tolle, NE NW NW 29-1-16, pumped 157 bbl. oil in 12 hr., initial potential 314 bbl., Hunton 2,360-62 ft., T.D.

NEBRASKA DRILLING REPORT

Furnas County

Trickett & Atkins 1 Gossic . . . . . NW cor. 33-2-21w
T.D. 1,005 ft., S.D.

Nemaha County

Palansi'ki et al 1 Dolhke . . . . . C NE NE 14-3-12
T.D. 733 ft., S.D.
Frank Engles 1 Wheeler . . . . . NE cor. 9-4-14
Underreaming 8-in. 2,542 ft.
Ray Pulliam et al 1 Lawrence . . . . . SE cor. 35-5-15
Drilling 2,413 ft.

Richardson County

Eckhart et al 1 Ast . . . . . SW SW NW 6-1-14
Lansing 767 ft., drilling 1,500 ft.
McIntyre et al 1 Hough-Hill . . . . . C SE SW 6-1-16
Lansing 919 ft., underreaming 8-in. 1,848 ft.

NEBRASKA FIRST REPORTS

Nemaha County

Jackson & Rust 1 Shafer . . . . . C SE SE 19-4-16

Richardson County

Skelly 3 Wallraff.....SE NW SE 20-1-16

Missouri Activity

The Ohio Oil Co., Phillips Petroleum Co., Magnolia Petroleum Co. and certain individuals are paying lease rentals in Missouri, at least in the northwest part. Carter Oil Co. was believed to be dropping a block southeast of Agency in Buchanan County, Missouri. A stratigraphic rotary test was made in the block some months ago.

Phillips Petroleum Co. is dropping a block near Robinson in Brown County, Kansas. The Gulf Oil Corp. is to take a block being assembled in Brown County, Kansas, around 8-2s-18e. The Ohio has a small block to the south.

In the Iowa sector of the Forest City basin, W. O. Smythe et al 1 Hook in C NE NW 18-69n-35w, was skidding rig 50 ft. to start a new hole. Ten-inch casing collapsed when it was set at 720 ft.

In the Kansas sector there was activity in Doniphan County. The Garden Contracting Co. of Hutchinson, Kans., headed by Jock Garden, was building rotary rig for 1 Ross Elliott in NE SE SE 31-3s-20e. Associated with Garden is R. W. Holcomb of Douglas, Kans. This test is about 25 miles west of St. Joseph.

MISSOURI DRILLING REPORT

De Kalb County

American O. & G. 1 Thompson . . C SW SW 30-58-31w
Simpson 2,126 ft., Arbuckle 2,215-50 ft., T.D., S.D. orders.

Oklahoma Fields

(Continued from Page 80)

oil tests 38 gravity, and will be purchased by the Johnson Oil & Refining Co., which also holds lease on SE Section 31.

The Layton zone was had at 1,334-55 ft., and was to be shot. Cummings et al 1 Canyon had only a show of oil in the Layton and was abandoned some time ago

OKLAHOMA COMPLETIONS

Caddo County

Texas 1 Smith ..... C NE NW 2-5-12w
Flowed 3,000,000 cu. ft. gas, sand 2,966 ft., T.D. 4,396 ft.
Magnolia 7 Hedlund .....SE NE NE 11-5-9w
Flowed 57,000,000 cu. ft. gas, sand 5,038-80 ft., T.D.
Ohio 6 Rigney .....SW SE SE 12-5-9w
Flowed 323 bbl. oil in 4 hr., initial potential 1,940 bbl., perf. 3,324-48 ft., T.D. 3,388 ft.

Carter County

Batson 7 Williams .....CN½ N½ SE 20-4s-2w
Pumped 185 bbl. oil initial after 50-qt. shot in sand 2,038-51 ft., T.D. 2,096 ft.
Gibson 5 Mertens .....CSL N½ S½ 20-4s-2w
Pumped 99 bbl. oil in 24 hr., sand 1,945-65 ft., T.D., 40-qt. shot
Porterfield 1 Walker .....NW NE 20-4s-2w
Pumped 179 bbl. initial from sand at 2,102-52 ft., set 7-in. casing 2,102 ft., T.D. 2,154 ft.

Cotton County

Stewart 1 Emery .....NE NE 30-3s-13w
Dry, T.D. 3,689 ft., no shows, Albany 910 ft., upper Cisco 2,530 ft., old T.D. 2,503 ft.

Creek County

Tilney 5 Wright .....NW NE SE 17-17-8
50 bbl., Prue 2,320-50 ft., T.D.
Glenn 1 Merritt .....NE SW NW 26-18-7
25 bbl., sand 1,918-60 ft., T.D. 1,970 ft.
Beal 1 Lampkin .....SE SW SE 25-14-9
Dry, T.D. 2,026 ft., Prue 1,985-2,026 ft., show oil and water, P.B. to 2,018 ft., shot 1,985 ft., 900 ft. oil in hole was exhausted.
Martin 1 Harrison .....SE NE NE 8-14-10
Pumped 35 bbl. oil from Misener 3,157 ft., T.D. 3,173 ft.
Abraham 1-A McIntosh .....NW NE 7-16-10
Pumped 25 bbl. oil, 50-qt. shot 2,327 ft.. T.D. 2,352 ft.. old T.D. 2,339 ft.
Adamson 1 Cosar .....SW SE 10-18-10
Dry, Mississippian lime 2,513-20 ft., T.D.
Jackson 3 Martin .....SW SE NE 18-18-10
Pumped 30 bbl., Prue 1,997-2,055 ft.. T.D. 2,059 ft.

Grady County

Ray 1-A Kearns .....NE SW SE 21-3-5w
Pumped 50 bbl. oil and 50 bbl. water after 1,000 gal. acid. T.D. 2,400 ft.. old T.D. 2,375 ft.

Hughes County

Loval 1-A Teeter .....NW NE NE 7-8-9
Completed for 20,000,000 cu. ft. gas from Cromwell sand 3,324 ft., T.D. 3,336 ft.

Jackson County

Burke 6 Minor .....SW SE NE 15-1-20w
Pumped 35 bbl., 7-in. casing set 1,350 ft., T.D. 1,378 ft.
Bales 1 Illinois Bankers .....NW SE 24-1-20w
Dry, Arbuckle 2,745-2,878 ft., T.D.

Jefferson County

O. U. Beck 11 Seay .....SW SW SE 34-6s-5w
7 bbl., lime 1,534 ft.

Kay County

Williams 1-A Trublood .....C SE SE 25-25-1w
Dry, T.D. 1,076 ft.

Kiowa County

Argo 1 Ratliff .....SE NE NE 19-7-17w
Flowed 584 bbl. oil through tubing in 6 hr. after 2,000 gal. acid, T.D. 1,055 ft., perf. 969-1,017 ft. and 1,039-48 ft.

Le Flore County

LeFlore 37 Lester .....C SW 5-6-23

EASY—

- to Position Lever Arm
- to Remove Inside Valve
- to Dismantle Regulator

All C-F Low-Pressure and Medium-Pressure Regulators are built with flanged upright bolted on, for easy detachment and renewal of valve seats. This important convenience, long familiar to users of larger-size C-F equipment, is now standard on C-F Regulators of whatever size. Ask for new Catalog.

2" Low-Pressure Regulator with Automatic Cut-Off

The CHAPLIN-FULTON MFG. CO.

28-40 PENN AVE. CF PITTSBURGH, PA.

REILLY PIPE COATINGS
Give Dependable Protection

● Experience of leading oil and gas companies operating pipe lines have established the thorough dependability and permanence of protection against rust and corrosion offered by REILLY PRIMER and PIPE ENAMEL. These coatings are easily applied at a central point, or as the pipe is laid. They bond firmly to the metal, are abrasion resistant, withstand wide extremes of temperatures and are unaffected by soil acids. Write for additional information.

Reilly COAL TAR PRODUCTS

REILLY TAR & CHEMICAL CORPORATION
Executive Offices: Merchants Bank Building, Indianapolis, Indiana
2513 S. DAMEN AVENUE, CHICAGO, ILLINOIS 500 FIFTH AVENUE, NEW YORK, N. Y. ST. LOUIS PARK, MINNEAPOLIS, MINN.
FIFTEEN · PLANTS · TO · SERVE · YOU

MUD PUMP DURAGAUGE

No mud or water can enter into the mechanism of the new Mud Pump Duragauge. It is made with a fluid filled system, with a non-corrosive stainless steel bulb.

It is easy to read. Made with a suppressed scale, with open readings over the working range. The case is moisture-proof and dust-proof. It has a non-breakable front. It has a 2" male bottom connection for screwing directly on the pipe line. It is not affected by vibration nor changes in temperature. Accuracy guaranteed to within 1% of the scale range.

ORDER FROM YOUR DURAGUAGE DISTRIBUTOR!

Branch Stocks in Tulsa and Los Angeles. Other branches in Dallas, Houston, Corpus Christi, New Orleans, New York, Chicago, Detroit

ASHCROFT GAUGES MM MANNING, MAXWELL & MOORE, INC. BRIDGEPORT CONNECTICUT

IT'S A VIKING — directly connected through flexible coupling to gas-gasoline engine — pumping 70 barrels per hour — operating under 50 pounds pressure — mounted on welded steel skids. ITS JOB — field transfer service and circulating tank bottoms to prevent an excess accumulation. For complete technical details on this type of Viking Rotary Pump, write for Bulletins 2500-40 and 2800-40.

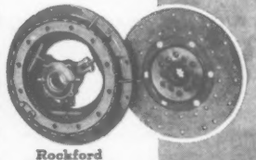
VIKING PUMP CO.

CEDAR FALLS, IOWA

The Journal makes a swell Christmas present.
Your friends will appreciate such thoughtfulness

Rockford Clutches

Rate High in Oil Fields



Rockford Over-Center Clutch

Rockford Plate Clutches, in both Over-Center and Spring-Loaded types, give notably smooth, reliable power transmission control that makes them outstanding in oil field services. The Over-Center Clutch locks in and out of engagement; the Spring-Loaded works like an automobile clutch. In pumping or drilling equipment, tractors, and various other applications; Rockford Plate Clutches serve with utmost reliability and economy for long periods under hard usage. Made in many sizes and capacities, Rockford Clutches are well suited to a wide variety of equipment and working conditions. Ask for Rockford Clutches in your equipment . . . profit by the advantages they offer. Write for full details.

Rockford Spring-Loaded Clutch

ROCKFORD DRILLING MACHINE DIVISION BORG-WARNER CORPORATION
1305 Eighteenth Avenue, Rockford, Illinois, U. S. A.

Over-Center Clutches • Spring-Loaded Clutches • Pullmore Clutches

Dry, T.D. 3,225 ft., show gas in sand 2,087-2,219 ft.
Wildcat: Murdoc 1 fee ..... C NW SW 15-5-2e
Temp. abandoned, set 6-in. casing 2,645 ft., T.D. 2,710 ft.

Lincoln County

Berkey 2 Gragg ..... NE SE SE 32-12-6
Flowed 320 bbl. oil in 24 hr., sand 3,276-81 ft., 7-in. casing set 3,280 ft., T.D. 3,299 ft.

Logan County

Amerada-Stanolind 3 Fouts ..... NE NE 14-17-1w
Recompleted, flowed 3,701 bbl. oil and 2,250,000 cu. ft. gas per day, old T.D. 5,140 ft., P.B. to 4,895 ft. in Hunton.
H. P. Gas 2 Matherson ..... C SE SW 34-18-4w
Flowed 400 bbl. and 8,000,000 cu. ft. gas, Layton sand 4,829-74 ft., T.D.

Marshall County

Pure 3 Little ..... NE SE 28-5s-7
Flowed 320 bbl. in 24 hr. through choke from sand 4,872 ft., 7-in. casing set 4,869 ft., T.D. 5,070 ft.

Okfuskee County

Wells 1 Robinson ..... SW SE SE 24-10-11
Pumped 20 bbl., Booch 1,994-2,016 ft., T.D.

Pawnee County

Meteer 1-A Woods ..... CSL NE NE 9-20-6
50,000 cu. ft. gas, sand 352-62 ft., T.D.
Platter 3 Tillock ..... SW NE 5-20-9
2,000,000 cu. ft. gas, Oswego 1,737 ft. and Prue 1,813-27 ft., T.D.

Payne County

Magnolia 4 Cain ..... C E½ NE SW 12-17-1
Recompleted for 478 bbl. oil after perf. 4,552-84 ft., in Hunton, T.D., old T.D. 4,951 ft., in Wilcox.
Berry 1 Johnson ..... NE SW SE 17-17-6
Dry, T.D. 2,983 ft., Prue 2,874-2,940 ft., acidized 5,000 gal. and flowed 3 bbl. oil.

Pontotoc County

Bray 1 Neal ..... SE SW NW 25-5-4
Pumped 108 bbl., Trenton 2,530 ft., T.D. 2,588 ft.
Scoggins 1 Gordon ..... SW NE NE 34-5-7
Pumped 11 bbl., Allen sand 1,103-13 ft., T.D. 1,127 ft.

Pottawatomie County

Atlantic Refining 2 Harris ..... SE NW SW 6-6-4
Pumped 16 bbl., dolomite 4,290 ft., T.D. 3,000 ft.
Smith 1 Maud ..... SE NW SE 27-8-5
Dry, T.D. 4,470 ft., Dense 4,260 ft., dolomite 4,302 ft., Wilcox 4,341 ft., second Wilcox 4,462-70 ft.

Seminole County

Mid-Continent 6 Harjoe ..... NE SE SE 31-7-8
Dry, T.D. 3,260 ft., Cromwell 3,206 ft.
Stanolind 1-B Grisso ..... NW NE SW 15-9-8
Flowed 60 bbl., Senora sand 2,886 ft., shot 2,905 ft., T.D. 2,937 ft.
J. F. Smith 1 Chulma ..... SE NW SE 27-8n-5e
Dry, second Wilcox 4,470 ft.

Stephens County

Burkhart et al 9 Green ..... NE NE SE 27-1-5w
3 bbl., sand 691-735 ft., T.D.
Sun 1 Boring ..... NE SW NW 9-1s-4w
Dry, T.D. 6,310 ft., show oil in sand 5,490 ft., show black oil in sand 5,620-40 ft.

WILDCAT DRILLING REPORT

Caddo County

Ray Stephens 1 Lankford ..... SE SE NW 6-6-9w
T.D. 2,640 ft., S.D.

Comanche County

Hilton Phillips 1 Reick ..... NW NW SW 29-4-10w
Drilling 2,820 ft.

Cotton County

E. R. Steward 1 Emery ..... NE cor. 30-3s-13w
T.D. 3,689 ft., running Schlumberger.

Creek County

Irvin Drlg. 1 Bailey ..... SE NE SE 1-18-9
T.D. 2,321 ft., drilling by pipe.

Hughes County

Ed Scruggs 2 Black ..... NW NE NE 13-9-10
Drilling 1,305 ft.
Don Feagin 1 Fulks ..... NE NW SW 8-9-11
Lower Gilcrease 2,572 ft., T.D. 2,588 ft., est. 1,000,000 cu. ft. gas with show oil.
Magnolia 1 McKoy ..... SW SW SE 16-5-11
Drilling 5,068 ft.

Jackson County

Mutual Oil 1 Caves ..... NW cor. 36-4-21w
Drilling 605 ft.

Kay County

Fred Elders 1 Voehl ..... SE SE NW 34-27-2w
Old T.D. 1,200 ft., drilling 1,510 ft.
Union Nat. O. & G. 1 Long ..... NW cor. 29-28-1
Set 8-in. casing 2,440 ft.

Kiowa County

Artie Baker 1 Coakley ..... NW NE SE 30-7-17w
T.D. 1,013 ft., running 8-in. casing.
Gled 1 Howard ..... SW SW NE 20-7-17w
Drilling 2,450 ft.

Logan County

Big Chief & Ellison 1 Strange .... C SW SE 27-18-4w
Drilling 4,630 ft.
I. T. I. O. 1 Cronkite ..... NE SE NW 22-15-4w
Drilling 1,726 ft.

Marshall County

May Oil 1 Sacrea ..... SW NE SW 17-5s-5
T.D. 2,310 ft., cleaning out 1,600 ft.

Okfuskee County

Moffett 1 Field ..... C SW NE 31-10-12
Drilling below 2,150 ft.
Portable Drlg. 1-A Nelson ..... NE SE SW 1-11-9
Oswego 1,322 ft., Earlsboro 2,205 ft., Booch 2,843 ft., Gilcrease 3,118 ft., Mississippian Caney 3,540 ft., Mayes 3,740 ft., Hunton 3,846 ft., drilling 3,950 ft.
Fred Coogan 1 Davis ..... SW SE NE 20-11-9
Drilling 1,525 ft.
W. O. Carte 1 Bucco ..... NE NE SE 20-10-12
T.D. 1,000 ft., S.D.
Hayes Drlg. 1 McKernan ..... C E½ SE NW 25-12-8
Drilling by pipe 4,169 ft.
Vierson et al 1 Meyers ..... SE NE NE 1-11-6
Drilling 4,165 ft.
Vierson et al 1 Leonard ..... SW SE NW 11-13-7
T.D. 3,594 ft., flowed 18 bbl. oil and 35 bbl. water in 24 hr.

Oklahoma County

Harper-Turner 1 Harper ..... NW NW SW 17-14-2w
Drilling 710 ft.

Osage County

Brookhaven Oil 1 Osage ..... NE NE SW 6-22-8
Drilling 915 ft.
Oklahoma Nat. 1 Osage ..... NW NW NE 29-22-12
Drilling 1,643 ft.

Payne County

Roy Star 1 State ..... C W½ SW SW 16-20-2
Deer Creek 1,910 ft., drilling 3,120 ft.
Helmerich & Payne 1 Freeman ..... NW NW SW 2-17-2
Drilling 4,040 ft., elev. 891 ft., Pawhuska 1,400 ft., Hogshooter 3,245 ft., Layton 3,275 ft., Checkerboard 3,345 ft., Big lime 3,875 ft., Oswego 3,875 ft.

Pottawatomie County

Vierson 1 Mevers ..... SE NE NE 1-11-6
Show oil 2,915-25 ft., Viola 3,510 ft., drilling 4,075 ft.

Seminole County

Hilton Phillips 1 Thorn ..... NW NE NE 3-7-5
Drilling 1,550 ft.
Alma Oil 1 Borden ..... NE SE NW 4-8-8
Calvin 1,560 ft., show oil, drilling 2,310 ft.
Amerada 1 Campbell ..... N½ SW SW 30-9-6
T.D. 2,274 ft., swabbed 5 bbl. an hour, shot 80 qt., 4,233-73 ft., cleaning out to 4,255 ft.

Stephens County

G. L. Pace 1 Miller ..... NW NE NW 13-3s-5w
T.D. 2,741 ft., P.B. 952 ft., set 7-in. casing 933 ft., drilled out and hole filled with oil, est. 10 bbl.

Tillman County

Price et al 1 Crow ..... NW NW NE 24-2s-15w
Drilling 1,000 ft.

Woods County

Gulf 1 Hess ..... C NE NW 33-23-13w
Drilling 6,220 ft.

Permian Basin, Panhandle

(Continued from Page 75)

Sloan & Zook 1 W. E. Bailey, Section 103, Block 4-X, C.&M. Survey, was drilling ahead below 3,350 ft. in anhydrite. The section was topped at 2,450 ft., or 891 ft. above sea level, which placed it, according to one correlation, some 37 ft. lower than the Uscan Oil 1 Brownfield, a failure several miles to the west.

Too far away from production for any immediately effective limitations, the Slaughter field outpost by Cascade Petroleum Co. was quit during the week as a failure. It was 1 Walker, Section 22, League 22, McCulloch County School Lands Survey, 9 miles east of production in the Slaughter field. It was quit at 5,100 ft. with top of sulfur water formation called at 5,080 ft.

NORTHERN WEST TEXAS COMPLETIONS

Andrews County

Means field: Humble 84 Means, 237 bbl., gas lift, 5,000 gas acid, 4,358-4,535 ft.

Cochran County

Duggan field: Osage Drlg. Co. 1-B Moore, 57 bbl., open tubing, 8,500 gal. acid, 5,005-55 ft.

Gaines County

Seminole field: Amerada 4 Mann, 672 bbl., ½-in. choke, natural, 5,010-5,205 ft.
Amerada 6-A Riley, 800 bbl., ½-in. choke, natural, 5,114-5,350 ft.
Amerada 2 Robertson, 441 bbl., ½-in. choke, 2,000 gal. acid, 5,137-5,250 ft.
Ohio 4 Gibbs, 563 bbl., ½-in. choke, natural, 5,135-5,308 ft.
Magnolia and Atlantic 5-195 H.&J., 422 bbl., ½-in. choke, natural, 5,130-97 ft.
Magnolia and Atlantic 3-217 H.&J., 798 bbl., ½-in. choke, natural, 5,155-5,335 ft.
Magnolia and Atlantic 13-219 H.&J., 476 bbl., ½-in. choke, natural, 5,135-5,266 ft.

Hockley County

Slaughter field: Awoeb Oil 1-B Mid-Seale, 585 bbl., casing, 7,000 gal. acid, 4,920-5,020 ft.
S. W. Richardson 7 Slaughter, 1,071 bbl., casing, 8,000 gal. acid, 4,900-5,000 ft.
Stanolind 17-B Slaughter, 1,085 bbl., 1-in. choke, 8,500 gal. acid, 4,974-5,060 ft.

Scurry County

Sharon field: Mudge Oil 4 Holcomb, 50 bbl., pumping, 340-qt. shot, 2,375-2,496 ft.
Ordovician Oil 1 Alliance trust, 315 bbl., pumping, 780-qt. shot, 2,255-2,445 ft.

Terry County

Slaughter field: George Livermore 2 Jacobson, 657 bbl., casing, 4,000 gal. acid, 4,977-5,036 ft.
Western States Gasoline 5 Frazier, 618 bbl., 1-in. choke, 3,500 gal. acid, 4,999-5,035 ft.

Yoakum County

Wasson field: Aloco Oil 16-A Miller, 493 bbl., tubing, 10,000 gal. acid, 4,970-5,198 ft.
Aloco Oil 1 Smart, old total depth 5,022, deepened to 5,140 ft., new initial 916 bbl., 1⅛-in. choke, 8,000 gal. acid.
Aloco Oil 5 Walker, 414 bbl., tubing, 10,000 gal. acid, 4,870-5,275 ft.
Don Danvers 2 Bennett, 1,275 bbl., 10,000 gal. acid, tubing, 4,998-5,270 ft.
Dunigan & Brahaney 2 Shipley, 381 bbl., tubing, 10,000 gal. acid, 5,130-5,349 ft.
Helmerich & Payne 4 Dowell, 980 bbl., tubing, 8,000 gal. acid, 5,000-90 ft.

NORTHERN WEST TEXAS DRILLING REPORT

Andrews County

Phillips 1-222 Embar, SE SE Sec. 6, Blk. 44, Twp. 1n, T.&P. Sur., drilling 200 ft.
Phillips 1-223 Embar, NE SW Sec. 7, Blk. 44, Twp. 2n, T.&P. Sur., drilling 845 ft.
University Lands Sur., drilling 2,540 ft.
Phillips 2 Embar, NE SE Sec. 5, Blk. 44, Twp. 2n, T.&P. Sur., ¾ mile N of Embar, drilling 3,410 ft.

Cochran County

Rhodes and Atlantic 1 Dean, C NE Tract 4, Lge. 89, Lipscomb Co. School Lands lost tools, 5,030 ft., recovered tools; prep. drill ahead with cable tools.

Gaines County

Fred Postello 1 Henry James, SE Sec. 368, Blk. G, C.C.S.D.&R.G.N.G. Sur., T.D. 5,231 ft., slight porosity 5,073-92 ft., testing.
Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., 9,000-ft. test, logged new pay about 6,610 ft., tight well, believed drilling about 8,450 ft.

Hockley County

Cascade Pet. 1 Walker, Sec. 22, Lge. 22, McCulloch County School Lands, S.D. 5,103 ft., sulfur water, prep. quit as failure.

Terry County

Gulf 4 Mallett, Sec. 4, Blk. X, P.S.L. Sur., SW of Slaughter field, only slight sat. and porosity in regular section, will go about 500 ft. deeper, drilling 5,136 ft.
Sloan & Zook 1 Bailey, Sec. 103, Blk. 4-X, P.S.L. Sur., 4 mi. NE of Wellman, top anhydrite 2,450 ft., drilling 3,350 ft.
Denver Prod. & Ref. 1 Lewis, Sec. 62, Blk. D, Gibson Sur., 3½ mi. S of Wellman, T.D. 2,100 ft., hole 10° off vertical, will redrill new hole from 1,250 ft.

Yoakum County

Forest Development 1 A. C. Whisenant, SE Sec. 553, Gibson Sur., 1½ mi. N outpost to Waples-Platter area, T.D. 5,500 ft., oil lime 5,410-85 ft., 5½-in. liner set from 4,454-5,515 ft., bailed 14 bbl. salt water daily, still testing.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Nov. 25.—A wildcat in eastern Eddy County centered attention at the close of the past week as increases in oil were found. It is Skelly Oil 1-B J. S. Lea, wildcat ¾ mile west of the Maljamar field. The hole was unloading itself of accumulated oil every 7 hours. Pay was drilled last week from 3,530-36 ft. and from 3,550-56 ft. Increases were logged from 3,700-12 ft. Gradual increases were found in drilling to a total depth of 3,800 ft. It is located 1,980 ft. from the south and 660 ft. from the east lines of 23-17s-31e, on the east edge of Skelly Oil Co.'s 6,400-acre Lynch-Dow-Lea block.

In Chaves County, and after indicating a discovery several weeks ago, Steinberger 1 J. B. Headley is drilling ahead below 2,690 ft. A considerable volume of gas had been logged from 1,826-28 ft. It is located in NW SW 26-14s-29e.

SOUTHEAST NEW MEXICO COMPLETIONS

Lea County

Maljamar field: Cockburn 22-B Baish, SE NE 28-17-32, flowed 15 bbl. an hr. on 4-hr. gage, open tubing, 260-qt. shot, 3,896-3,996 ft.
Arrowhead field: Continental 11-J-2 State, 2-22-36, flowed 66 bbl. per hr. for 2 hr., ¾-in. choke, natural, 3,760-3,852 ft.
Humble 5-M State, 19-22-37, flowed 128 bbl. in 8 hr., tubing, 3,695-3,719 ft.
Jal field: Continental 1-B-25 Sholes, SE NE 25-25-36, flowed 45,000,000 cu. ft. gas daily, open casing, 2,873-2,950 ft.

SOUTHEAST NEW MEXICO DRILLING REPORT

Chaves County

H. Steinberger 1 Headley ..... NW SW 26-14s-29e
Est. 500,000 cu. ft. gas 1,826-28 ft., drilling 2,690 ft.

Eddy County

Fulton 1 Johnson ..... NW SE 22-19-27
Fishing bit in lime 1,435 ft.
Truett & Tallmadge 1 Rudahl ..... NE SE 2-20-24
12½-in. 302 ft., drilling 910 ft.
Wills & Abell 1 Hale 12-20-30
6,000,000 cu. ft. gas from 1,540-60 ft., sulfur water at 1,823-24 ft., P.B. 1,528 ft., perf. casing 1,540-66 ft., est. 100,000 cu. ft. gas, S.D.
Dooley & Haynes 1 Martin ..... SE NW 9-18-25
5½-in. at 975 ft., drilling 1,040 ft.
Trojan 1 Grant ..... SW NE 33-20-25
Set 8¼-in. at 1,300 ft., S.D. 1,874 ft.
Clark & LaNeve 1 Boulter ..... SE NW 28-19-27
Show oil 1,126 ft., S.D. 1,250 ft.
Suddreth et al 1 Willis ..... SW NW 14-20-28
6 mi. W of Getty field, location.
Emmerson Brovles 1 Canfield ..... SW SW NW 13-18-30
1 mi. NE of Kersey Creek discovery.
Fred Turner 1 DeVito 12-23-35
Show gas 1,100-05 ft., 7-in. at 1,320 ft., drilling 1,410 ft.

Lea County

Great Western Prod. 1-D State ..... SE SE 30-12-32
T.D. 4,385 ft., P.B. to 3,048 ft., show oil 3,021-33 ft., perf. casing with 24 shots, pumped 40 bbl. oil and 8 bbl. water in 15 hr. and pumped off, still testing.

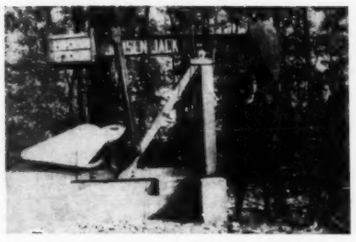
Otero County

R. H. Ernest 1 Located Land Co. ..... SE SE 20-25-7
T.D. 3,808 ft., P.B. and drilling out cement at 3,770 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Nov. 25.—The recently started wildcat in Hansford County was being abandoned as a failure the past week after encountering the markers structurally low. It was I. T. I. O. 1 O'Laughlin, Section 2, Block 2, W.C.R.R. Survey. It was quit at 3,249 ft. in dolomite. When the test was started about 3 weeks ago it was not contracted to any great depth, however, it was reported that should the geological

We're Ready to "Tell All!"



No. 6D Cable Head Jensen Straight Lift Unit saving money for an operator in the Bradford (Pennsylvania) Area.

A current school of advertising thought demands that the advertiser spill the works. We're ready. You tell us about your wells and we'll tell you what JENSEN JACKS will accomplish on your property.

We've made pumping equipment for 22 years. We are the oldest and largest exclusive manufacturer in the field. Loyal employees in a modern plant, and enthusiastic customers from coast to coast cooperate in simplifying and perfecting JENSEN JACKS.

For the low-down on how to cut production costs to the bone right now without making trouble for yourself later on, get in touch with your JENSEN dealer or write-wire-phone us at Coffeyville.

JENSEN BROTHERS MANUFACTURING CO.
Coffeyville, Kansas, U. S. A.
EXPORT OFFICE: 50 Church St., New York

If you haven't had that FREE list of important oil books, by all means send your request to the Book Department, The Oil and Gas Journal, Tulsa, Oklahoma.

markers check favorably it would continue possibly to 4,000 or 4,500 ft. The failure of this test does not end the company's exploration in the area for another wildcat is due to be definitely located within a few weeks.

There were six new oil wells and one new gas well completed in the Panhandle district the past week to total 1,153 bbl. of new oil and 9,700,000 cu. ft. of new gas.

TEXAS PANHANDLE COMPLETIONS

Carson County

Texas 11 Moore, 140 bbl., 300-qt. shot, 3,030-3,130 ft.

Gray County

Bell Oil & Gas 11-B Morse, 75 bbl., pumping, 430-qt. shot, 2,372-2,415 ft.
Adams-McGahey & Solow 2 Pond Creek, 141 bbl., pumping, 720-qt. shot, 2,615-67 ft.
Magnolia 36 fee (277), 101 bbl., pumping, 370-qt. shot, 2,890-2,971 ft.

Hutchinson County

J. E. Crosbie 37 Pitts, 255 bbl., pumping, 610-qt. shot, 2,725-2,849 ft.
Texas 31 Pond, 441 bbl., pumping, 280-qt. shot, 2,975-3,070 ft.

Moore County

Continental 1 L. B. Armstrong, 9,700,000 cu. ft. gas, 2,840-3,120 ft.

DRILLING REPORT

Hansford County

I. T. I. O. 1 O'Laughlin, SE SE Sec. 2, Blk. 2, W.C.R.R. Sur., 3,000-ft. test, preparing to abandon at 3,249 ft.

Motley County

Humble 1 Matador, Sec. 29, Blk. J, B.S.B.&C.N.G. Sur., fishing bit 5,400 ft.

Ochiltree County

James R. Macon 1 W. R. Norris, SW SE Sec. 212, Blk. 43, H.&T.C. Sur., T.D. 6,274 ft., P.B. 4,300 ft., S.D.O., prepare P.B. to 4,000 ft. and shut off water.

Swisher County

Krupp-Flaherty 1 Keen, Sec. 120, Blk. 10-M, 6,500-ft. test, top salt 1,020 ft., S.D., casing 1,747 ft.

Southwest Texas Fields

(Continued from Page 88)

Live Oak County

White Creek field: Brauer, Holland & Smith 3-B Gaylor, 125 bbl., pumping, T.D. 1,311 ft.
Alvin Brauer 6-A Bonham, dry, T.D. 1,336 ft.

Starr County

Rincon field: W. R. Davis 37-B Slick, 215 bbl., 3/16-in. choke, perf. casing 4,146-68 ft., T.D. 4,373 ft.
W. R. Davis 38-B Slick, 203 bbl., 3/16-in. choke, perf. casing 4,134-42 ft., T.D. 4,457 ft.
Sun field: Sun 2-C Speer, 17 bbl. oil and 5 bbl. salt water, 3/16-in. choke, perf. casing 4,640-41 ft.

Zapata County

Glen field: Transwestern 2 Yeager-Stroman, 135 bbl., pumping, T.D. 2,179 ft.
Charco Redondo field: McCollum Exploration Co. 1 Garcia, dry, T.D. 1,425 ft.
McCollum Exploration Co. 1 Trevino, dry, T.D. 1,288 ft.
Wildcat: Hagen and Stewart 3 Martinez, dry, T.D. 1,232 ft.

SAN ANTONIO DISTRICT

Bastrop County

Red Rock field: Helvetia Oil Co. 1 Carroll, dry, T.D. 2,810 ft.

Caldwell County

Bee Creek field: Ralph Ogden 1 Miears, 287 bbl. 5 per cent water, flowing by heads, T.D. 2,186 ft.
Salt Flat field: Wiegand Brothers 12-A Briscoe, 43 bbl. oil, plus 40 per cent water, pumping, T.D. 2,711 ft.

Gonzales County

Wildcat: M. M. Kinley 1 Weber, gas well, T.D. 676 ft

Guadalupe County

Day field: M. H. Dees et al 2 Day, 30 bbl., pumping, chalk 2,461-82 ft., T.D.
Wildcat: Pat Armstrong 1 White, top Austin chalk 2,751 ft., dry, T.D. 2,837 ft.

SOUTHWEST TEXAS DRILLING REPORT

Brooks County

West Production Co. 1 Ehlers, 5 mi. NE Falfurrias, T.D. 8,333 ft., reaming.

Cameron County

Pure 4 Gatewood Newberry, 5 mi. SW of Point Isabel, drilling 1,510 ft.

De Witt County

G. B. White et al Poetter, semiwildcat, Slick field, drilling shale 2,900 ft.

Duval County

Carter & Rubsamen, 1 Clara Driscoll, Santa Rosalia grant, coring 2,510 ft.

Hidalgo County

Humble 1 American Life Insurance Co. 3 mi. N of Hargill, dry, T.D. 8,524 ft.

Lee County

Humble 1 Melde, NW Giddings, L. P. Rucker Sur., drilling shale 3,457 ft.

Nueces County

F. A. Gillespie 1 Dabney, 3 mi. SE of Banquette, drilling shale 6,790 ft.
Stanolind 2 J. A. Thompson, Riverside field, T.D. 6,200 ft., running electrical survey.

San Patricio County

Henderson Coquat 1 Mengers, East Mathis area, drilling shale 3,500 ft.

Louisiana Gulf Coast

(Continued from Page 96)

Gibson field: Shell 10 Pelican, 321 bbl., 9/64-in. choke, perf. casing 9,506-11 ft., T.D. 9,512 ft.

LOUISIANA GULF COAST DRILLING REPORT

Acadia Parish

Herton 1 Leonard, 29-7s-1e, drilling shale 8,400 ft.
H. N. Naylor 1 Medlenka, 33-9s-2w, drilling shale 5,009 ft.

Assumption Parish

Humble 1 A. B. Michie, 108-14s-15e, drilling shale 9,567 ft.

Calcasieu Parish

W. T. Burton et al 1 Mayo Realty Co., South Lake Charles prospect, T.D. 10,945 ft., cemented leak in casing at 10,000 ft., W.O.C.

Cameron Parish

Lisbon-Iberia 1 Calcasieu National Bank, Loury prospect, 10¾-in. casing 2,219 ft.
Superior 4 State-Calcasieu Lake dome, drilling sandy shale 7,067 ft.

Plaquemines Parish

Gulf 1-B Timolat et al West Bay prospect, T.D. 4,316 ft., reaming.

Terrebonne Parish

Barnsdall 2 Nelson Dvelopment Co., Pointe Au Fer prospect, drilling shale 6,510 ft.
Stanolind 1 State Bay Junop, 35-21s-14e, drilling shale 8,446 ft.

Vermilion Parish

Union 4 Louisiana Land & Fur Co., Schooner Bayou field, T.D. 9,025 ft. fishing for stuck drill pipe.
Union 1-B School Board, Schoonery Bayou field, drilling shale 9,110 ft.

Michigan Fields

(Continued from Page 91)

Co. 1 Miller, C-NW 3-10n-2w, gas test, dry, Michigan stray, T.D. 902 ft.

Isabella County

Broomfield Township: Pure 17 Wille, S½ NW NE 4-14n-6w, acid, 75 bbl., T.D. 3,631 ft.
Lincoln Township: Allegan Pipe & Supply Co. 1 Freed, S½ SE SE 33-13n-4w, dry, T.D. 3,606 ft.

Monroe County

Dundee Township: George L. Kernodle 1 Bragg, NE NW SW 30-6s-6e, acid, 30 bbl., T.D. 2,145 ft.

Ogemaw County

Foster Township: Weber 1 State, W½ NE NE 25-24n-1w, temporarily abandoned, T.D. 3,966 ft.

Osceola County

Lincoln Township: Taggart Bros. 55 Cornell, S½ S½ SE 30-18n-5w, 7,500,000 cu. ft natural gas, T.D. 1,245 ft.

Ottawa County

Tallmadge Township: Daily Crude Oil Co. 1 Powell, NE NW NW 5-7n-13w, 16 bbl., shot, Berea, T.D. 1,185 ft.

Van Buren County

Bloomingdale Township: Jetter Drilling Co. 3 Hence, NW SW NW 14-1s-14w, 150 bbl., acid, T.D. 1,307 ft.
Geneva Township: Smith Petroleum Co. 1 Erickson, SW SW SE 21-1s-16w, dry, T.D. 1,046 ft.

Gotkoo!
WATER CANS & COOLERS

GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . . . .

H. P. GOTT MFG. CO.
WINFIELD, KANSAS

KEEP PURE DRINKING WATER ALWAYS HANDY

What are best modern methods of petroleum recovery?

Here is a thorough-going description and analysis of the most recently developed methods and devices for promoting production efficiency in the oil industry—from completion of wells to transportation of the products to market.

Shows how to

—drain petroleum from its reservoir rocks;
—bring it to the surface and prepare it for shipment;
—care for and remove impurities from the crude petroleum;
—design, construct and operate pipe lines at maximum efficiency.

Petroleum Production Engineering

OIL FIELD EXPLOITATION

By LESTER C. UREN, University of California
New 2nd Edition, 741 pages, illustrated, $6.00

Order from Book Dept.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

Pickens Northwest Outpost Failure Defines Field

By GEORGE WEBER

JACKSON, Miss., Nov. 25. — Another failure in the Pickens field of Yazoo County further defined that small producing area on the northwest last week. The Joe Dawson 1 Wilson, located 1,500 ft. northwest of production in the field, tested salt water and oil-cut mud in the Eutaw formation producing at Pickens.

Prospects for a field extension seemed good early in the week, when a sand body cored at 4,823-33 ft. showed 10 ft. recovery of a porous gray sand with a good odor and spots of oil in it. It showed a slightly salty taste, however. A drill-stem test at 4,818-23 ft. failed to hold and a second test at the same level, using ¼-in. chokes top and bottom, showed 30 ft. of drilling mud with no shows. The test was running normal with field wells to the southeast, but on coring further into the Eutaw sand and encountering the pay, the operators recovered 400 ft. of salt water and some oil-cut mud on a drill-stem test at 4,855-67 ft. The test is bottomed at 4,915 ft. after an electrical log had been run. It is reported that the test is abandoned, but no official notice is available. Failure of the Dawson test effectively restricts the Pickens pool to a small area, since it is defined in the other directions.

Fifth Salt Dome

Mississippi's fifth salt dome was discovered last week in Warren County as the Magnolia-Exchange 1 Paxton-Brown, south of the Glass dome, another salt intrusion, encountered salt at a reported depth of 5,108 ft. A sandy dolomite was drilled at 5,072 ft. and operators lost circulation. It was believed to be the cap rock for the salt dome. A drill-stem test was made above the cap in a section which showed up as porous sand on the electrical log, but according to drilling time and samples was hard and dense. The test recovered 1,830 ft. of salt water and 550 ft. of mud and operators then cored ahead into the salt.

Grenada Show

James Papadakis 1 Holcomb, a 5,000-ft. wildcat in Grenada County, made a slight show last week when a rainbow of oil and gas bubbles were noted on the pits while drilling at 2,825-35 ft. Operators went in and cored from 2,835-40 ft., recovering a dark gray shale with some sand but no shows of oil or gas.

The other current Mississippi test for which production prospects are interesting, is the Clint Crosby 1 Allen, Attala County wildcat, still shut down awaiting title work before perforating a likely section at 4,018-25 ft.

Jackson Gas Well

A new gas well for the dwindling Jackson field, Hinds County, seems assured from shows in the City of Jackson 1 fee which has tubing run and is being swabbed in. The well is drilled between two producers in the field and its drilling was prompted by an effort on the part of the city to force the taking of more Jackson gas by the local distributing company. Since the well apparently taps the same sand as the two nearby producers, its completion is not regarded as an addition to Jackson gas reserves, unless its subsequent production history shows that it flows from a separate horizon.

Tinsley Developments

Another record for thickness of the Woodruff sand section in Tinsley fell last week, as the Union and Magnolia 5 Robinette encountered 106 ft. of section on the southeast edge of the field. Four new wells were completed in the field during the week, three of them pumping, and others are awaiting completion on the beam.

Tinsley production has returned to normal, with all but one operator restricting production to 100 bbl. per well per day, the rate at which Standard Oil Co. of Louisiana purchases crude in the field.

Leasing and Exploration

Leasing continues stronger in southern Mississippi and Alabama and northwestern Florida, with geophysical activity following the same general trend. Core drilling continues on some large blocks, and soil-analysis tests are being made at several wildcat locations, and in Lamar County, in an effort to outline a structure recently drilled.

MISSISSIPPI COMPLETIONS

Tinsley—Yazoo County

E. C. Johnston 7-B Brumfield, NE NW 2-10-3, 528 bbl., pumping Woodruff sand 4,733-43 ft., 5½-in. casing 4,729 ft., T.D. 4,743 ft.
Slick-Urschel Oil Co. 10 Slick, SW SE SW 2-10-3, pumping 528 bbl., Woodruff sand 4,782-4,804 ft., T.D. 4,819 ft., 6-in. casing 4,796 ft.
Union 2 Childress, NW SW 24-10-3, 693 bbl., top Woodruff sand 4,798 ft., T.D. 4,818 ft.
Union 3 Childress, NW SW 19-10-2, 488 bbl., 16/64-in. choke, Woodruff sand 4,812-86 ft., T.D. 4,899 ft., 7-in. casing 4,858 ft.

MISSISSIPPI DRILLING REPORT

Attala County

Gulf 1 S. J. Peeler, NE SE 35-15-9, drilling 4,620 ft.
Jones & Crosby 1 Allen, SW SW 33-13-5, T.D. 4,534 ft., 5½-in. casing 4,086 ft., shut down.

Carroll County

L. H. J. Harper 1 Hearon, SE NW 26-17-4e, moving in.

Clarke County

Walsingham & Earles 1 School Land, SW NW NE 16-4n-15e, moving in.

Forrest County

Fohs Oil Co. 1 Batson-Hatton, 10-1n-12, set 10¾-in. casing 1,590 ft.

Grenada County

James Papadakis 1 Holcomb, SE NE 13-22-2e, coring 3,060 ft.
Womble & Williams 1 Conn. General Life Ins. Co., NW SE 28-23-5e, S.D. 1,620 ft.

Hinds County

Sanford & Sellers 1 J. D. Sellers, 23-6n-1e, drilling 497 ft.

Kemper County

R. M. Crabb et al 1 Land, NW NE 12-10-14, reported show oil 1,750 ft.

Lee County

R. L. Shoemaker 1 Martin, SW SW NE 33-9s-6e, fishing, T.D. 950 ft.

Marshall County

C. B. Blosser 1 C. Stansback, SE SE 19-3s-4w, drilling 700 ft.

Montgomery County

E. R. Henderson 1 Columbian Mutual Life Ins. Co., 36-21-5e, S.D. 3,504 ft.

Noxubee County

Hope & Thompson (former Adams & Clements 1 Donahoe, C NW 24-16n-17e, spudded, S.D. 12 ft. on former location, skidded over to new location.

Prentiss County

Home Dev. Co. 1 Allen, SW NW SE 8-7s-9e, S.D. 2,165 ft.

Sharkey County

British American 1 F. B. Houston, N½ NE SW 23-11n-7w, drilling 3,890 ft.

Tishomingo County

F. Mellen & Gear 1 E. K. Wood, SE SE SE 21-4s-11e, S.D. 840 ft., show of gas.

Warren County

W. O. Allen 1 Tom Henry, W½ SW

(Continued on Page 115)

Rocky Mountain Runs

Production for week ended November 23:

WYOMING

	Barrels
Salt Creek	12,490
Big Muddy	1,220
Byron	600
Cole Creek	610
Dallas Derby	450
Elk Basin	640
Frannie	3,160
Garland	2,820
Grass Creek	1,540
La Barge	1,780
Lance Creek	25,580
Lost Soldier	4,600
Mahoney	890
Medicine Bow	700
Oregon Basin	6,500
Osage	600
Quealy Dome	440
Rock River	2,580
Wertz	5,000
Total Wyoming	73,610

MONTANA

Kevin-Sunburst	4,820
Cat Creek	500
Cut Bank	11,500
Pondera	920
Total Montana	17,820

COLORADO

Iles Dome	1,530
Wilson Creek	620
Total Colorado	3,560

NEW MEXICO

Arrowhead	3,270
Cooper	2,890
Eaves	640
Eunice	16,490
Hardy	3,000
Hobbs	8,990
Jal	460
Langlie	4,000
Lynch	370
Lynn	830
Mattix	4,470
Monument	17,280
Penrose	4,630
Skelly	1,950
South Eunice	2,330
South Lovington	1,220
Vacuum	11,600
Artesia-Maljamar	17,270
Total New Mexico	103,420
Total Rocky Mountain region	198,210

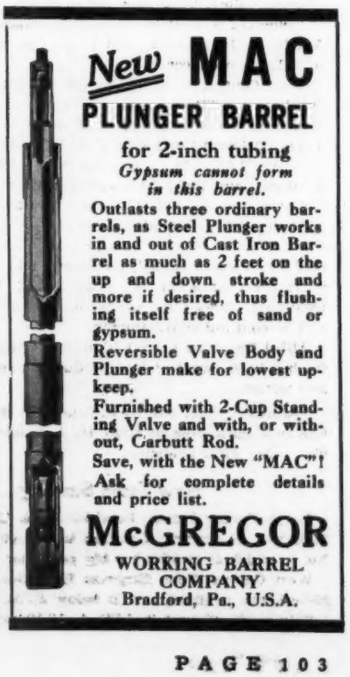
LEGAL

Department of the Interior, United States Land Office, Las Cruces, New Mexico. Notice is hereby given that lots 3 and 4, NE¼ SW¼ Sec. 31, T. 25 S., R. 37 E., N.M.P.M., New Mexico, containing 119.86 acres in the Jal Field, New Mexico, are offered to the responsible qualified bidder of the highest bonus per acre for lease under section 17 of the act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386 at a sale to be held in the United States Land Office, Las Cruces, New Mexico, at 10 o'clock, a.m., Dec. 4, 1940. The successful bidder must deposit on the date of the sale a certified check on a solvent bank, or cash, for 1/5 of the amount bid, and file the showing of qualifications to receive a lease, required by section 7 of Circular 1386. The remainder of the bonus bid and the annual rental of $1.00 per acre must be paid and a $5,000 corporate surety bond must be furnished prior to the issuance of the lease. The bidders are warned against violation of the provisions of Sec. 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

LEGAL

Department of the Interior, United States Land Office, Cheyenne, Wyoming. Notice is hereby given that a lease of the oil and gas deposits in lot 6 (NW¼ SW¼) and SW¼ SE¼ Sec. 6, T. 26 N., R. 89 W., 6th P.M., 81.64 acres, in the Wertz Dome (additional) oil and gas field, Wyoming, is offered to the responsible qualified bidder of the highest bonus per acre, the minimum bid to be $15.00 per acre, pursuant to the provisions of section 17 of the act of February 25, 1920 (41 Stat. 437), as amended, at the royalty rate scale in the lease form shown in circular 1386, at a sale to be held in the office of the Register of the district land office at Cheyenne, Wyoming, at 10:00 a.m. on December 18, 1940. The successful bidder will be required to deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the bid, and file a showing of qualifications to receive the lease required by section 7 of General Land Office circular 1386. The remaining four-fifths of the bid, together with the annual rental in advance at the rate of $1.00 per acre, must be paid and a $5000 corporate surety bond must be furnished prior to the issuance of the lease. The successful bidder is required to subscribe to the unit plan of operation for the Wertz Dome field, as approved by the Secretary November 4, 1937. Bidders are warned against violation of the provisions of section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

THAT'S WHERE TO STAY IN ST. LOUIS!
HOTEL Mayfair
DOWNTOWN - REAL FOOD AND SERVICE - NEARBY PARKING - PRIVATE BATH RADIO RECEPTION


New MAC
PLUNGER BARREL
for 2-inch tubing
Gypsum cannot form in this barrel.
Outlasts three ordinary barrels, as Steel Plunger works in and out of Cast Iron Barrel as much as 2 feet on the up and down stroke and more if desired, thus flushing itself free of sand or gypsum.
Reversible Valve Body and Plunger make for lowest upkeep.
Furnished with 2-Cup Standing Valve and with, or without, Carbutt Rod.
Save, with the New "MAC"! Ask for complete details and price list.
McGREGOR
WORKING BARREL COMPANY
Bradford, Pa., U.S.A.

North Extension Gives Turner Valley Largest Wells

By VICTOR LAURISTON

CHATHAM, Ont., Nov. 23.—Crude production from Turner Valley in October is reported at 767,542 bbl. from 122 wells, compared with 787,083 bbl. for September. The Royalite group of 34 wells produced 253,002 bbl.; Anglo-Canadian Oil Co. and associates with 22 wells produced 114,975 bbl.; Home Oil Co. with 3 wells yielded 74.457 bbl., and the Brown-Moyer-Brown group of 13 wells yielded 51,173 bbl.

October production was 10,542 bbl. short of the legal quota. November allowables, tentatively set at 762,000 bbl., have been increased to 782.668 bbl., or 26,089 bbl. daily. In the new schedule, retroactive to November 1, Home Oil 2 is the largest producer, with approximately 1,201 bbl. a day; Home 3 ranks second with 990 bbl.; and Alberta Oil Incomes 1 is third with 762 bbl.

Under the new system instituted by the Alberta Conservation Board under the chairmanship of Robert E. Allen, quotas for each well are set before the first of each month on a monthly basis. Later, on receipt of official figures of the previous month's production, these quotas are readjusted, to compensate for any shortage or excess.

On the basis of production already recorded, present allowables and probable completions, it is estimated that the 1940 output of crude, naphtha, and absorption gasoline from Turner Valley will exceed 8,000,000 bbl., comparing with the previous record yield in 1939 of 7,594,411 bbl.

Turner Valley Completions

North Turner Valley: Alberta Oil Incomes 2, LSD 4, 4-21-3w5, finished at 8,809 ft. flowed 1,884 bbl. through 1-in. choke, with gas-oil ratio of 1,200 cu. ft. It has been given allowable of 1,065 bbl., making it the second largest producer in the field. This completion extends the producing area ¾ mile north of Home Oil 2, the largest producer.

Foothills Oil & Gas 5, LSD 13, 27-20-3w5, finished at 7,775 ft., started at 500 bbl. and after acidizing reached a record flush of 650 bbl. in 2 hours, or at the rate of 7,800 bbl. a day. This rate of production exceeds the previous Canadian record of 7,000 bbl. established in the old Oil Springs field in 1862. In its initial Conservation Board test the well made 3,384 bbl. in the 24-hour run, finishing with 141 bbl. in the final hour, the highest figure ever attained in this type of test in Turner Valley. Final test for allowable is being made.

Home Oil 5, LSD 16, 28-20-3w5, finished at 8,078 ft., 548 ft. in the Madison, and is testing, with indications of a large producer.

West Central field: Okalta Oil 9, LSD 13. 18-19-2w5, finished at 7,971 ft., tested 15 to 16 bbl. an hour after acidizing, but is being pinched down to about 250 bbl. a day. Calmont-Northwest 2, LSD 5, finished at 7,956 ft. gave 2,307 bbl. a day on 1-in. choke test, after acidizing, and looks like a major producer.

Arrow Royalties 2, LSD 15, 13-19-3w5, finished at 8,353 ft., was given initial acid treatment in the upper zone of 3,500 gal. On 24-hour test it made 1,628 bbl., settling to about 50 bbl. an hour. Twin Valley 1, LSD 9, finished at 8,184 ft., after initial 1,300-gal. acid treatment, flowed by heads, making 475 bbl. a day; and is continuing treatments.

Allied Royalties 1, LSD 16, 6-19-2w5, finished at 7,625 ft., has been swabbed into production, and is acidizing and testing.

Southwest field: Northwest-Hudson's Bay 4, LSD 14 8-18-2w5, bottoming at 8,387 ft., is making around 600 bbl. a day after acidizing.

New Tests Starting

North Turner Valley: Foothills Oil & Gas 8, LSD 12, 27-20-3w5, is rigging. Location is immediately east of No. 5, which is finishing a big producer.

West Central field: Empress Royalties 1, LSD 5, 2-20-3w5, has spudded, and is below 87 ft.

Calmont-Northwest 3, LSD 4, 18-19-2w5, is rigging.

British American-Brown 1, LSD 14, 13-19-3w5, immediately west of the Arrow producers, has spudded. British-American-Brown 2, LSD 2, 24-19-3w5, is rigging. Two rigs will be kept in operation continuously on the 640-acre tract till a total of 10 or 12 wells have been drilled. British American Oil Co. will take production.

Tests in the Lime

North Turner Valley: Home Oil 1, LSD 8, 33-20-3w5 is below 7,482 ft. after getting the Madison lime at 7,202 ft.

Foothills Oil & Gas 7, LSD 4, 27-20-3w5, got the Madison at 7,980 ft. and is resuming after cementing at 8,003 ft.

Pouce Coupe Test

In the northern Alberta foothills west of Peace River, Guradian Oil 1, 7-80-12w6, is shut down at 6,642 ft., pending test by government officials in which electrolog will be used. Test of samples show a sweet crude of 33 gravity, analyzing: Naphtha, 22.3; kerosene, 11.4; distillate, 15.5; heavy oil, 47.8; loss, 3. The well may be shot. The crude apparently comes from the Devonian limestone.

Sheppard Creek Test

On the Sheppard Creek structure in the southern foothills, Alberta Pacific 1, LSD 6, 6-17-2w5, is shut down at 5,963 ft. after encountering small quantities of water 480 ft. in the Madison limestone. This approximates the depth at which the lime is productive in Turner Valley. The test, drilled jointly by Alberta Pacific Consolidated Oils and McDougall-Segur Exploration Co., will likely be abandoned.

Vermilion Deep Test

In the Vermilion field, East Central Alberta, Franco-Dalton 1, LSD 12, 25-50-6w4, 3 miles west of the town of Vermilion, is below 3,189 ft., and will be carried down as a test of the underlying Devonian limestone. S. W. S. Drilling Co. has spudded a new test ½ mile east of 2 Battleview, the crude discovery well. Western Drillers is starting a test 300 ft. east of 1 Acme, LSD 5, 20-50-6w4.

Athabaska Oil Reserves

Addressing the Canadian Institute of Mining and Metallurgy at Vancouver, Max W. Ball estimated oil reserves in the bituminous sand areas of northern Alberta at 100,000,000,000 bbl. Oil-bearing sands in the Athabaska district are estimated at 30,000 sq. miles with saturation as high as 27 per cent; and methods are being tested of mining the sands and separating and refining the crude.

Saskatchewan Gas Show

In the Bishopric area, southern Saskatchewan, Natural Sodium Products 1 gasser is being deepened for a thorough test. The first gas show was met at 615 ft. and a good show at 770 ft. and a strong flow at 1,468 ft., the hole being deepened to 1,480 ft. Flow was unofficially estimated as high as 15,000,000 cu. ft. a day. It has been cemented off and drilling is being continued to the next horizon, expected at 2,100 ft. Additional wells will be drilled.

Ontario Completions

Malahide Township: Central Pipe Line 1 Schooley Lot 22, Concession 4, finished at 1,084 ft., started with 950,000 cu. ft. a day and has settled to about 350,000 cu. ft.

Windham Township: Dominion Natural Gas 1, Lot 9-8, got 80,000 cu. ft. a day around 900 ft. depth.

Lake Erie: Wood & Prior 1, in Lake Erie opposite Romney Township and 800 ft. offshore, finished with a gas flow less than 150,000 cu. ft. a day.

Cotton Valley Structure Well Adaptable to Recycling

(Continued from Page 41)

on the map are all located within the —7,900-ft. contour. The committee, in planning the recycling system, may choose any of the remaining gas wells in the participating area for gas withdrawal.

Two cross-sections in Fig. 2 illustrate the regularity of the structure on the top of the Bodcaw sand. The sand shows a total relief of 600 ft. from —7,811 ft. in the highest well, to —8,425 ft. subsea in the lowest well in the field.

The participating area as now outlined is not fixed, but may be extended or retracted as production and future development indicate more clearly the area of gas production from the Bodcaw sand. It will be noted that the extreme northeast well was recently completed as a Bodcaw gas-condensate producer, and a change will be made in the limits of the area at that point to include the acreage surrounding the well. Likewise, if any current oil wells show a rise in gas-oil ratio above 10,000 cu. ft. per bbl., the area will be extended to include their acreage also. Oil-well output is handled by the individual operators under the regular state proration schedule, but gas production in the recycling plan is independent of proration, since gas is returned to the formation. The agreement, however, provides for the gathering of casinghead gas from oil wells for injection purposes.

For recycling to the "D" sand, a map similar to Fig. 1 would illustrate the same setup. The short interval between the "D" and Bodcaw sands makes the "D" contour map similar to that on the Bodcaw, so that the "D" sand injection wells, omitted in the Bodcaw map, are located with the same reference to structure as those to the Bodcaw. Four wells will inject gas into the "D" sand. They will be recompleted from the Bodcaw from which they now produce, as will various wells throughout the field, selected as "D" sand withdrawal wells. "D" sand participating area covers less area than the Bodcaw since its gas-saturated area is less extensive.

Fig. 3 is a schematic plan illustrating the possible field system when completed. All wells now completed in the Cotton Valley formation are shown, and the horizon from which each produces is indicated in the legend. Both the Bodcaw and "D" sand areas are outlined, to show their relation to the field system.

The field pipe-line system consists of three sections. A rim gas-gathering system will take gas from oil wells at pressures not less than 500 lb. per sq. in. and deliver it through three radial lines to the centrally located recycling plant.

The main gas-gathering system will serve all gas-condensate wells included in the recycling project, "D" and Bodcaw alike. Operating at a pressure of 2,000 lb. per sq. in., the gas-gathering system is constructed of 3,200-lb. test lines with a bursting pressure of 6,000 lb. per sq. in.

Two injection lines will carry gas from the discharge manifold of the compressor bank, to the "D" and Bodcaw injection wells. Gas at 3,000 lb. per sq. in. will be handled in the 5,000-lb. test lines, tested to a bursting pressure of 10,000 lb. per sq. in.

Future oil development along the northeast edge of the field will be served with casing-head gas lines extended from the present planned rim gas system. The facility with which gas production may be varied with this field system will promote accurate control of the direction of lean-gas flow through the sand. As the project progresses it will provide an excellent opportunity to observe the degree of stratification of lean gas down structure, and the rate of diffusion which takes place in the sand.

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended Nov. 23 High	Week ended Nov. 23 Low	Week ended Nov. 23 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38⅛	51	49¾	50⅝	Amerada Corp.	788,675	N.P.	50cQ	10-31-40	$2.00	$1.56	$2.07	74½	50	78	55
27⅛	18¼	23⅝	23	23⅝	Atlantic Refining	2,663,999	$25	25cQ	12-16-40	1.00	1.66	1.40	24¾	18⅛	27⅝	17¾
16⅝	8½	10¾	9⅝	9⅝	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.25	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	10¼	9½	9⅝	Barnsdall Oil Co.	2,558,779	$5	15c	12-9-40	.90	.76	1.26	19½	11⅛	21⅜	10⅛
8⅛	5½	6¼	6	6⅛	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	11-15-40	.80	.55	.55	9⅞	6½	10⅜	7
25	16⅛	21¼	20	20⅛	Continental Oil of Delaware	4,682,572	$5	25cQ	9-30-40	1.00	1.35	1.10	31½	19⅞	35¾	21¼
6⅞	3⅜	4⅝	4¼	4½	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	9⅜	4½	9¾	5
14⅜	8	12¾	11½	12	Lion Oil Refining	435,815	N.P.	25cQ	10-10-40	1.00	1.50	2.09	18⅛	10	25⅛	15⅝
17⅝	11½	15	13¾	14	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.60	1.42	.56	18	11⅛	22⅝	12¼
11	7⅛	11¼	10⅜	10⅜	Mission Corporation	1,378,645	$10	25c	12-20-40	.65	.87	1.04	14⅞	8¾	17¾	10⅝
9¾	4⅝	7½	7	7⅛	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	15½	5⅝	23	12½
8¾	5⅜	7¾	7	7¼	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	10½	6	14⅞	8⅞
8¼	5½	8⅞	8	8¼	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	.81	1.22	11⅞	7	15⅞	10¼
10½	6¾	....	....	....	Pan American Pet. Trans.	4,702,945	$5	....	12-21-39	....	1.10	.08	8¾	5	9¼	6¼
41¾	27⅛	39¾	38½	39¾	Phillips Petroleum	4,449,052	N.P.	50cQ	11-30-40	2.00	2.21	2.03	46½	31¼	44⅜	27¼
22¾	15	19	18½	18½	Plymouth Oil Co.	1,038,633	$5	25c‡	12-23-40	§1.40	2.38	2.59	24	17⅛	25⅝	15
11½	6¾	8½	8	8⅛	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11⅜	6⅛	13⅛	8¼
8⅝	6⅞	9⅛	8½	9	Richfield Oil Corp.	4,010,000	N.P.	50c	12-18-39	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	15½	14⅝	14⅝	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	9-14-40	1.00	1.40	1.52	24⅜	15½	27½	15½
13⅛	7⅝	10½	9½	10	Shell Union Oil	13,070,625	N.P.	25c	7-16-40	.50	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	22	20¼	20½	Skelly Oil	995,349	$15	50c	12-20-40	.75	1.99	2.27	29½	15½	34⅜	18½
12½	7⅛	9¾	9	9¼	Socony-Vacuum	31,206,071	$15	25cSA	9-16-40	.50	1.10	1.29	15⅛	10¼	16⅜	10¾
26⅛	16¼	20	19⅛	19⅛	Standard Oil of California	13,003,953	N.P.	25cQ	12-16-40	1.10	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	27⅜	26½	27	Standard Oil (Indiana)	15,272,020	$25	50c†	12-16-40	1.25	2.23	1.82	30	22¾	35½	24¾
46½	29⅞	36⅝	34⅝	34⅝	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.25	3.26	2.86	53½	38	58⅜	39¾
65⅞	46¾	53	50	51	Sun Oil	2,434,863	N.P.	25cQ	12-16-40	1.00	2.74	1.07	66	45¾	65⅛	45
2½	1⅛	1⅝	1½	1½	Superior Oil Corp.	1,388,979	$1	10c	12-28-38	....	.04	.24	3⅝	1¾	4¼	1¾
47⅝	33	39⅞	38	38	Texas Corp.	10,876,139	$25	50cQ	10-1-40	2.00	3.02	2.13	50¾	32½	49⅝	32⅝
4¼	2½	3⅜	3¼	3¼	Texas Gulf Producing Co.	888,146	N.P.	10c	12-14-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5⅜	6½	6¼	6⅜	Texas Pacific Coal & Oil	888,236	$10	10c	12-2-40	.40	1.00	1.16	11⅜	7	12½	7
12	8¾	10⅜	9¾	9¾	Tide Water Associated	6,371,827	$10	15c	12-2-40	.80	1.05	1.28	14¼	9½	15⅜	10⅛
17½	12	13⅞	13½	13⅝	Union Oil Co. of California	4,666,270	$25	25c	11-10-40	1.05	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	27⅝	26¾	27⅝	Union Tank Car Co.	1,177,381	N.P.	45c	12-2-40	1.30	2.07	1.16	24¼	20⅛	23½	20
3⅝	1¾	2⅛	2	2	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1¼ per cent in stock. —Deficit

New York Curb Exchange

1940 High	1940 Low	Week ended Nov. 23 High	Week ended Nov. 23 Low	Week ended Nov. 23 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10¾	4½	6	5¾	5¾	American Republics Corp.	1,308,049	$10	10c	7-11-38	....	$0.14	—.22	11¾	5½	11¾	5
3¼	1⅜	2¼	2⅛	2⅛	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	7¼	2½	10¼	4⅞
43	28	....	....	....	Buckeye Pipe Line Co.	200,000	$50	$1	12-14-40	$2.50	3.13	2.36	34¾	26½	39	22½
117	105	107½	106½	106½	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-23-40	6.00	7.87	5.32	130	108¾	128	97
6¾	4	6¼	5⅞	5⅞	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
2⅛	⅛	⅞	⅞	⅞	Cosden Petroleum	465,332	$1	....	....	....	....	....	2¼	½	2⅜	⅞
24¼	11⅝	16	14⅛	15	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	28	16¾	27½	17½
4⅜	2⅞	....	....	....	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	.03	.69	7⅛	3⅝	10¼	5½
2	1	1⅛	1⅛	1⅛	Derby Oil & Refining	263,162	N.P.	....	....	....	—.37	—.91	2⅝	1½	3½	1½
31	22	....	....	....	Eureka Pipe Line	50,000	$50	50c	11-1-40	2.00	.63	—.37	23	15⅛	31	16
39⅞	25⅛	34¼	32	34	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-40	2.00	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	62	61	61⅝	Humble Oil & Refining	8,987,840	N.P.	62½c	12-26-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5½	7⅝	7	7⅛	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	1.00	.71	.96	17	11⅜	19½	14⅛
7¾	3	3½	3½	3½	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	.50	.33	.47	7¼	5½	9⅜	6
19¾	8¼	10⅞	10½	10½	International Petroleum	14,324,088	N.P.	50c	12-2-40	1.75	1.19	1.98	27½	17	31¼	21
2¾	1⅝	....	....	....	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3¾	2⅛	5	2⅛
10¾	7⅝	10⅜	9⅞	10	Lone Star Gas	5,518,347	N.P.	30c	12-21-40	.70	.98	.88	10½	7⅛	10⅜	6⅝
6¼	3¾	4¾	4⅝	4⅝	Louisiana Land & Exp.	2,966,762	$1	10c	9-14-40	.35	.22	.45	7¾	4	9⅜	6½
17	9¼	....	....	....	Margay Oil Corp.	149,943	N.P.	25cQ	10-10-40	1.00	1.52	2.28	17	14½	24	16
8½	6½	8	7¾	7¾	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	6	5¾	5¾	Mountain Producers	1,593,584	$10	30cSA	6-15-40	.60	.70	.62	6	4⅞	5¾	4½
13⅛	10	11½	11⅛	11¼	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-40	1.00	.95	.84	14	11¼	14⅝	11½
12½	8¾	10¾	10½	10¾	National Transit	509,000	$12.50	50c	6-15-40	.85	.91	.88	9½	7¼	9¼	6½
1⅜	¾	1	1	1	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅜	1	2⅝	1½
7¾	5¼	....	....	....	New York Transit	100,000	$5	25c	9-20-40	.40	.88	.16	6	4	4½	3½
9⅞	6	8½	8½	8½	Northern Pipe Line	120,000	$10	40c	12-2-40	.30	.31	.24	7	4½	6	4
5½	2½	3⅞	3½	3⅝	Pantepec Oil	2,856,872	$1	....	....	....	....	....	7⅝	4	7¾	3½
3¼	1¼	1⅝	1⅝	1⅝	Root Petroleum Co.	336,045	$.	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
2¾	1½	2¾	2¾	2¾	Ryan Consolidated	298,931	N.P.	....	....	....	.16	.29	3	1⅞	4	2⅛
11¾	4¾	....	....	....	Southern Pipe Line	100,000	$10	25c	9-3-40	.30	.25	—.27	4⅞	3½	5⅜	3¼
44	28	35¾	35¾	35¾	South Penn Oil	1,000,000	$25	37½c	9-27-40	3.00	2.84	1.44	40½	26¾	39	28¾
35	21	....	....	....	Southwest Penna. Pipe Lines	35,000	$50	50c	9-16-40	2.00	2.06	—.41	23	18	22¼	16½
20⅞	16½	20	19¾	20	Standard Oil of Kentucky	2,604,790	$10	25c	9-14-40	1.30	1.53	1.45	20⅛	17¼	18¾	15
41¾	26¼	35½	33¾	35½	Standard Oil of Ohio	753,740	$25	25c	9-14-40	1.50	6.64	1.81	32¾	17	22¾	16¼
2	1⅝	1¾	1⅝	1⅝	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2¾	1¾	3¼	2
3⅛	2	3	2⅞	2⅞	Texon Oil & Land	936,024	$2	10c	12-30-40	.10	.49	.56	4	2⅝	5¼	3½
3⅜	2	2⅛	2⅛	2⅛	Transwestern Oil Co.	750,000	$10	....	....	....	—1.42	.12	6	2½	5¼	2⅝
2⅛	⅛	1⅛	1	1⅛	United Gas Corp.	7,818,959	$1	....	.....	....	—.55	—.51	3⅜	1½	5¼	2⅝

†Includes extras. —Deficit.

Personal Paragraphs

WILLARD F. JONES, general manager, marine department, Gulf Oil Corp., and director, marine section, National Safety Council, presided last week at a special meeting of the Maritime Association of the Port of New York. The meeting was limited to those engaged in the maritime industry.

AUBREY W. SCHOFIELD, assistant superintendent for the Gulf Oil Corp., Houston, Tex., has left his desk to join mobilization orders of the 111th Observation Squadron of the Texas National Guard in which he is a major. Major Schofield will be headquartered at Houston until December 1, and will leave then for Camp Bowie, Texas.

DON MOORE, independent operator, Houston, Tex., left last week for an extended deer hunt in West Texas.

C. C. HUTCHINGS, formerly a scout at Ardmore, Okla., and Shawnee, Okla., is now an independent oil operator, with headquarters at Evansville, Ind.

C. E. HOWELL has been transferred from the Ponca City, Okla., area of Continental Oil Co. to Mount Carmel, Ill., as assistant superintendent of the Illinois-Indiana district.

ROBERT H. ROBIE, geologist for the Shell Oil Co., Inc., at San Antonio, Tex., discussed "The Wilcox Trend of Southwest Texas," at the Houston Geological Society meeting the past week.

ROY N. FERGUSON, WILLIAM W. VALENTINE, and RICHARD M. FERGUSON have organized Oilexco, Inc., and have opened offices in the Subway Terminal Building, Los Angeles, Calif.

ARTHUR C. MUNYON, geologist of the Georgia State Geological Society, will address the Mississippi Geological Society at Jackson on the night of December 4, 1940. His subject will be "The Oil and Gas Possibilities and Stratigraphy of South Georgia."

DAVID L. THOMAS, assistant secretary, assistant treasurer, and general agent of Southern Pipe Lines, Oil City, Pa., has retired from service after 50 years of activity in the pipe-line industry. He and Mrs. Thomas will make a western trip and will return to Oil City in the spring.

DR. RUSSELL S. POOR, head of the Department of Geology at Birmingham-Southern College, Birmingham, Ala., presented a paper on "The Stratigraphy of Northern Alabama" before the Mississippi Geological Society at a recent meeting.

WILLIAM F. BUCKLEY, president, and J. L. BARNETT, treasurer, Pantepec Oil Co., New York; DR. ALEJANDRO PEITRI, chief geologist, Standard Oil Co. of Venezuela, Caracas, and B. T. N. VAN HASSELT, general manager, Caribbean Petroleum Co., La Guaira, sailed from New York last week on the Santa Paula for South America.

A. J. RUTHDEN-MURRAY, general manager, Kern-Trinidad Oil Fields, Ltd., San Fernando; H. A. BENNET, business manager, Trinidad Petroleum Development Co., Ltd., Pala-Saco, and G. E. ROTHERY, assistant store superintendent, and R. T. MacLEMORE, drilling department, United British Oil Fields of Trinidad, Ltd., Point Forton, sailed from New York November 15 for Trinidad.

H. B. FELL, executive vice president, I.P.A.A., discussed the association's five-point program at a district meeting of more than 100 oil operators and royalty owners in North Texas at Olney, Tex., November 19. An organizational discussion was given by I. DEE CAMPBELL of the I.P.A.A. and D. H. BOLIN, Wichita Falls, Tex., president of the North Texas Oil and Gas Association, spoke briefly on the national program.

R. Q. TRAWEEK, general refinery superintendent, Eastern States Petroleum Co., Houston, Tex., has been honored by his company with the naming by the company of its new shipping terminal at Houston for him. The terminal will be known officially as "Traweek Terminal." Mr. Traweek has been with the company since its organization and acquisition of the refinery properties of the former Deepwater Oil Refineries, Inc., in 1936.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Gypsy Oil Co. is considering the use of straight rotary in drilling wells at Blackwell. Opinion was expressed that the rotary would work well in shutting off some troublesome gas sands between 1,000 and 2,500 ft. but would probably be unable to make hole below the latter depth.

El Dorado, Kans., is the center of an active lease play as the result of good production from Wichita Natural Gas Co.'s 660-ft. test in 29-25-5.

H. F. Sinclair, general manager of the firm of White & Sinclair, is organizing a force for development of the company's Mexican properties.

20 YEARS AGO

At Mexia, Tex., Humphreys Petroleum Co. and others have a well in the Woodbine sand at 3,405 ft. The nearest Woodbine production is that at Shreveport, La.

El Dorado, Ark., is one of the most active oil towns in the country as a result of the 22,000,000-cu. ft. gas flow from the Constantin well.

An oil strike in the Trenton at Waterloo, Ill., has opened up a large area for exploration. Pay is found at 394 ft.

10 YEARS AGO

The Joiner pool continues to be a disappointment as two dry holes limit it on the northeast and southeast. Hopes that the district will be more than a shoestring are centered on Hunt 1 Bradford which is drilling to the south of the discovery.

The Casper (Wyo.) Chamber of Commerce was host to Robert S. Ellison, retiring vice president of Midwest Refining Co., at a farewell dinner and reception. Mr. Ellison is moving to Tulsa to become president of the Stanolind Crude Oil Purchasing Co.

J. O. HARPER, scout with Pure Oil Co., has been transferred from Wichita Falls, Tex., to Jackson, Miss.

ALDEN W. FOSTER has resigned as vice president of the firm of Ralph E. Davis, Inc., engineers, of Pittsburgh, Pa. He will announce his future plans later.

WILLIAM KECK, JR., vice president of Superior Oil Co. with offices in Los Angeles, Calif., took the Clipper ship for Australia a few days ago, accompanied by Mrs. Keck.

E. FLOYD MILLER, geologist for the Oliphant Oil Corp., Shreveport, La., delivered a paper on the Cotton Valley field before the South Louisiana Geological Society at Lake Charles, La., last week.

J. G. DYER, vice president in charge of production for the Continental Oil Co., Ponca City, Okla., made a tour of inspection through the Rincon field in South Texas in which his company recently purchased a half interest.

PHILLIP GENSLER, oil attorney of Homer, La., one of Louisiana's new assistant attorney generals, has been given charge of an investigation of state mineral leases to determine whether they are being properly developed.

GLEN M. RUBY, engineer and geologist with offices in Los Angeles, Calif., will speak at the dinner meeting of the A.I.M.E. Thursday evening, December 5, on oil in South America. Mr. Ruby has been chief geologist of the Y.P.E. in Argentina, having only recently returned to his Los Angeles office.

ANDREW MILEK, formerly chief geologist for Consolidated Oil Corp., in New York City, has been transferred to the Sinclair Prairie Oil Co. headquarters at Tulsa.

J. N. HOLDEN, of Union Oil Co., has been transferred to the research and development department and in his new duties has been appointed resident engineer at Oleum, Calif., refinery.

J. HUMPHREY HUDSON, drilling contractor and oil operator, Ardmore, Okla., is recovering from a severe illness that kept him in a St. Louis, Mo., hospital for several weeks. He is now recuperating at Ardmore.

P. L. MULKIN, Oil City, Pa., was guest of honor at a dinner given by his departmental associates of United Natural Gas Co., November 16, at Oil City. Mr. Mulkin, who is superintendent of distribution and director, has just completed 40 years of service with the company.

R. T. McANALLY, formerly in the Orlando, Okla., office of Shell Oil Co., Inc., is the new district superintendent in the office which the company has reopened at Pampa, Tex. The Texas Panhandle district has for the past 2 years been handled out of the North Texas district office in Wichita Falls.

CHARLES E. SUTTON, division manager of the Gulf Coast district for Pure Oil Co. in its Fort Worth, Tex., office, will shoulder additional duties this week when he takes over the work of R. W. McILVAIN, JR., Texas division manager. Mr. McIlvain holds the rank of first lieutenant with Troop B, 124th Cavalry, Texas National Guard, and will leave for a year's service in the Forty-fifth Cavalry Brigade.

Yellow Gold to Black

John Robert Suman, who in February will assume the presidency of the American Institute of Mining and Metallurgical Engineers, was born in Daleville, Ind., in 1890. He received his education in California, at the Los Angeles High School, the University of Southern California, and later at the University of California at Berkeley, where he was graduated as a mining engineer in 1912.

JOHN ROBERT SUMAN

His early professional experience was in gold mining, but he soon entered the oil industry, which was then beginning its rapid expansion. He worked successively as chief engineer and later as general manager for the Rio Bravo Oil Co., as technical superintendent for the Roxana Petroleum Corp., and as general manager of operations in Texas for the Associated Oil Co. of California.

In 1927 Mr. Suman became associated with the Humble Oil & Refining Co. and in 1933 was made vice president in charge of production. He is credited with playing a major role in the aggressive expansion which has made Humble a leading producer of petroleum.

Mr. Suman is an active participant in the affairs of the American Association of Petroleum Geologists, the American Petroleum Institute, and the Mid-Continent Oil and Gas Association. During the past year he headed the highly successful campaign of the Houston Community Chest. He is the author of many technical articles and his book, "Petroleum Production Methods," published in 1921, has been a standard reference work for many years.

Mr. Suman is married and has two sons.

WARREN WYNN, geologist for Sinclair Prairie Oil Co., Tulsa, has been transferred to Bismarck, N. D.

TOM GIRDLER, geologist for Sinclair Prairie Oil Co., at Shawnee, Okla., has resigned as of November 15.

H. ROBINSON, land man for Phillips Petroleum Co., has been transferred from Jackson, Miss., to St. Joseph, Mo.

L. A. BLUMENTHAL, formerly in the foreign-trade department of Socony-Vacuum Oil Co., Inc., has been temporarily transferred to the eastern marketing division.

AL CHANEY, geologist for the Ohio Oil Co. in the Forest City basin, has suffered a relapse and is under observation at the Mayo Clinic, Rochester, Minn.

EARL B. GILMORE, president of Gilmore Oil Co., has been elected chairman of the Hollywood Turf Club, succeeding JACK L. WARNER. Mr. Gilmore, who has been president of the club for the past year, will hold both titles and be in direct charge of the coming racing season.

H. J. ROBERTS, of Gulf Oil Corp., Houston, Tex., has been elected president of the Gulf Coast Oil Scouts and Land Men's Association. Other officers elected at the meeting last week were: JIM NOEL, Atlantic Refining Co., vice president; J. E. TURNER, Continental Oil Co., secretary-treasurer; P. E. LANGLEY, Sun Oil Co., special representative of the national association; BILL BROWN, Shell Oil Co., Inc., manager of the year book, and JAY ELLIS, Skelly Oil Co., sergeant at arms.

DAN KELLY, editor of the Expanding Circle, house organ for the Arkansas Fuel Oil Co. and affiliated companies, Shreveport, La., was named a director of the Southwestern Association of Industrial Editors at a recent meeting at Oklahoma A. & M. College.

Shifts: CHARLES M. TARR, engineer, Continental Oil Co., from Avenal, Calif., to Wasco, Calif.; T. P. WARE, geologist, W. R. Davis & Co., Inc., from McAllen, Tex., to Houston, Tex.; W. R. KENNEDY, engineer, Texas Co., from Wichita Falls, Tex., to Penwell, Tex.; W. B. HOGG, engineer, National Geophysical Co., from Magnolia, Ark., to Forest, Miss.; JOHN C. ROBESON, engineer, Carter Oil Co., from Effingham, Ill., to Columbus, Kans.; S. B. KELLOW, superintendent, Sallee Brothers, from Vandalia, Ill., to Grayville, Ill.; W. L. McCLOY, JR., engineer, Sohio Production Co., from Allegan, Mich., to Le Roy, Ohio; J. E. LE SUER, president, Le Suer Oil Corp., from Wellsville, N. Y., to San Jose, Calif.; J. R. MUNCE, vice president, Arkansas Natural Gas Corp., from Pittsburgh, Pa., to Sarasota, Fla.; MAURICE WEBB, engineer, Warren Petroleum Corp., from Galva, Kans., to Salem, Ill.; T. C. WILSON, geologist, Atlantic Refining Co. of Cuba, from Havana, Cuba, to Atlantic Refining Co., Pittsburgh, Pa.; J. M. RICH, geologist, Carter Oil Co., from Meridian, Miss., to Natchitoches, La.

S. B. ROBERTS and JIMMIE WEST, drilling contractors of Abilene, Tex., were injured, although not seriously, last week end when the automobile in which they were driving crashed into the back of a parked truck on the highway just south of Abilene.

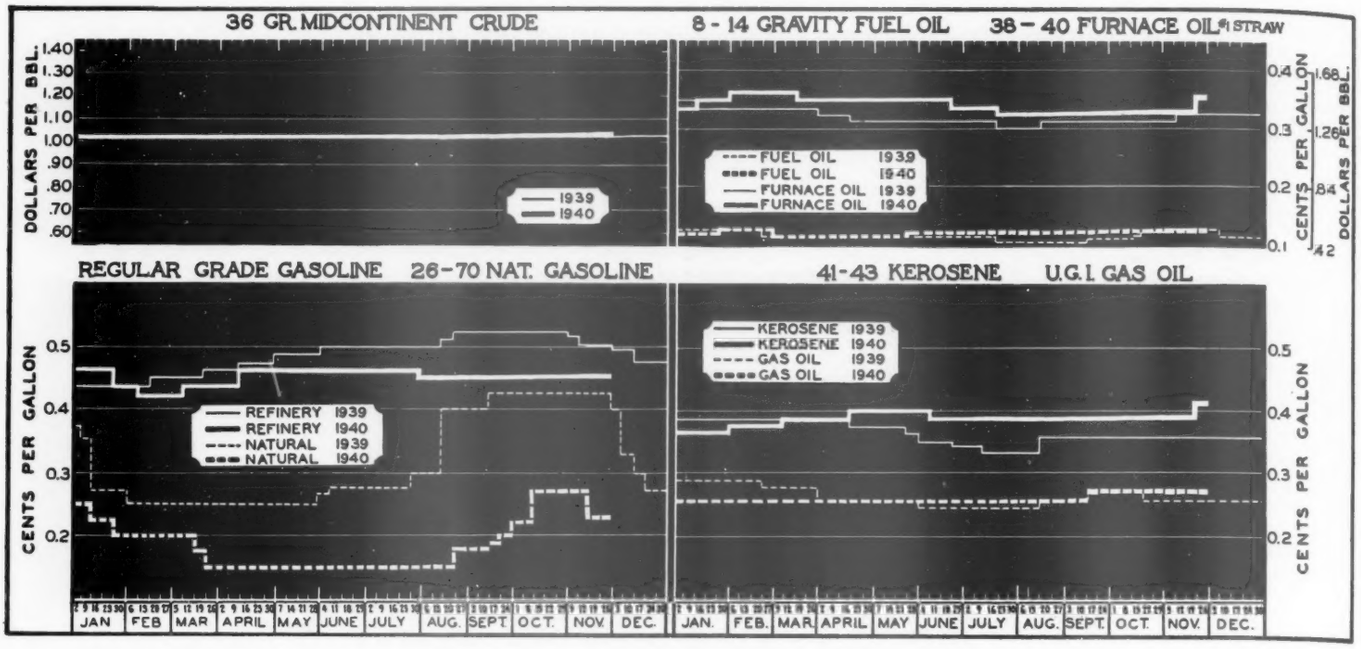
D. D. CHRISTNER, division geologist for Continental Oil Co., Fort Worth, Tex., and Mrs. Christner, together with CHARLES D. VERTREES, district geologist for the company in the Midland, Tex., office, and Mrs. Vertrees returned last week from a hunting trip in the Apache Mountains in Culberson County, Texas. One nine-point deer and two four-point deer were killed.

E. DeGOLYER, petroleum geologist, will deliver a series of lectures at the University of Oklahoma, December 4 and 5. He will lecture on "The Occurrence and Distribution of Petroleum," "Prospecting for Petroleum," "Production of Petroleum," and "Utilization of Petroleum." While the lectures will be given primarily for the benefit of students in geology and petroleum engineering, all will be open to the public.

CLAREL B. MAPES, of Tulsa, secretary of the general Mid-Continent Oil and Gas Association, will be one of the principal speakers at the annual membership meeting of the West Central Texas Oil and Gas Association at Abilene, Tex., December 2.

ALDEN COFFEY, JR., former sales promotion and advertising manager for the Texas-New Mexico Utilities Co., has been appointed to the same position with the Oklahoma Natural Gas Co., Tulsa. He succeeds H. VINCENT POTTER, who resigned to accept a position in Fall River, Mass.

DR. RALPH T. GOODWIN, fuel-oil technologist, has been appointed manager of fuel-oil sales for Shell Oil Co., Inc. BENJAMIN G. SYMON has been named manager of the company's technical products department; DAVID WAXMAN now heads the company's asphalt department, and A. J. M. HAMON has been placed in charge of aviation activities east of the Rocky Mountains for the company. H. L. CURTIS has just been made sales production and advertising manager, and will be in complete charge of all advertising activities west of the Rockies. JOSEPH H. LEE, of New York City, has been placed in charge of all lubricant sales east of the Rockies.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Distillate Fuel-Oil Prices Make Bid For Domination of Winter Market

By H. STANLEY NORMAN

DISTILLATE fuel-oil prices moved forward this week in their preliminary bid for domination of the winter refinery market. Tank-car sellers elevated their spot-market quotations ⅛ cent per gallon without meeting important resistance from the buyers.

Movement of all light fuel oils is reported exceptionally brisk. Demand still lacks the compulsion characteristic of the late-winter market which indicates that additional price advances must await more severe weather. Several refiners who had declined to sell distillate fuels at previously quoted prices are now supplying whatever demand accrues to their plants. Enticement of previously withheld stocks into the distillate-fuel market is expected to prevent an additional advance until consumption reaches greater proportions.

Residuals Active in Chicago

Residual fuels are active in the Chicago market where currently quoted prices are paid without resistance. Heavy fuels are a relatively small factor in the Mid-Continent refining district and, consequently, the market for these products is mostly of passing interest and useful as a yardstick in renewal of contracts with railroad customers. High-cold-test residuals are selling in Chicago for a minimum of 50 cents and range up to $1.10 for No. 4 burning oil.

The market improvement for light fuel oils covered the entire bracket from kerosene down to No. 3 low-cold-test. Most important to Group 3 refiners, however, is the advance in the tank-car market for kerosene, range oil, and prime white distillate. Under the current general refining practice all three of the lightest burning oils are in the same specification bracket. The price for range oil is currently quoted at 3⅞ cents. There are extremely limited quantities available at the low of the spread which is 3¾ cents but buyers declare it would take more time to "pin it down" than the discount is worth. Furthermore, it seems only a matter of days until all suppliers will be asking the high of the quoted range.

Buying for replacement of stocks liquidated by the week of intense cold weather in the northern and middle western states earlier this month enabled the tank-car sellers of fuel oil to elevate their prices and make them stick. Some in the refining end of the industry had feared that fuel-oil prices would be unable to make their winter move into higher marketing ground until a more protracted period of subfreezing weather. The fact that higher prices lagged only about a week behind the comparatively brief period of freezing weather may be an indication of the vitality of this market for duration of the consuming season.

Resumption of motor-fuel movement into the northern states after a temporary lull 2 weeks ago was reported by several shippers. Gasoline prices are considered steady. Fractional improvement on the low side of the motor-fuel market range has been confirmed in some quarters.

Mild Optimism Prevails

The interruption of motor-fuel movement to northern consuming centers was particularly abrupt in Minnesota where the weather conditions inimical to automobile operation were centered during the early November storm. An attitude of mild optimism prevails but under the surface there is unmistakable evidence that the winter season so far has been gratifying.

Natural-gasoline prices have regained their composure after the slump of ½ cent per gallon 2 weeks ago when coastwise movement of motor fuel from the Gulf Coast suffered a collapse. Prices are clinging to the reduced level of 2¼ cents in Oklahoma and 2 cents in North Texas for 26-70 material for interstate movement. The intrastate market in Oklahoma ranges from 2¼ cents upward, depending on location of stocks with respect to refinery customers. The intrastate market for natural in Kansas is particularly strong and practically all manufacturers are asking and obtaining premiums for this type of business.

The lubricating-oil market among Group 3 refiners is feeling the upward pressure from Pennsylvania where refiners are nudging prices higher in line with the advance of 15 cents for crude which is now general throughout that section.

Refined Oil Market Barometer

Distillate fuel-oil prices advanced an eighth and a quarter-cent per gallon at several tank-car market centers throughout the territory east of the Rocky Mountains. The Group 3 tank-car market for distillate fuels went up an eighth while prices at several eastern seaboard points advanced a quarter of a cent. Motor fuel is moving briskly considering the season.

MID-CONTINENT: Kerosene, range oil and prime-white distillates were included in the price advance.

GULF COAST: Fuel oils in firm position as coastwise movement increases.

CALIFORNIA: Cooler weather on the Pacific Coast has increased demand for natural gasoline.

PENNSYLVANIA: Bright stocks are in stronger position. Kerosene up an eighth.

CHICAGO: Tank-wagon market for fuel oils stronger reflecting tank-car advance.

High Tanker Rates and Bulge in Demand Buoy Eastern Market

By J. P. O'DONNELL

NEW YORK, Nov. 26.—Kerosene and light fuel oil continued to exhibit strength in the eastern refined-oil market despite the unseasonably warm weather that pervaded the area in late November. The market continues to be supported by a combination of high transportation rates and good demand for the products.

No. 2 fuel oil remains posted at 4.5 cents per gallon, tank cars, in the New York Harbor area, but quarter to half-cent advances in the near future are freely predicted. Prices along the eastern seaboard in the main are unchanged from the week before but one large supplier is reported to have raised its Baltimore price to 4.5 cents from the previously quoted 4.25 cents.

The strength in kerosene was revealed by the announcement of the Standard Oil Co. of New Jersey that it had increased the dealer tank-wagon price at New Jersey points from 7.7 cents per gallon to 7.9 cents. This advance was effective Friday, November 22. Kerosene is strong elsewhere throughout the New York and New England area. Some suppliers are asking 5.5 cents per gallon in tank cars at refineries and terminals, but quantities of kerosene are also reported available at 5.1 cents.

Despite the current evidences of strength in both the fuel oil and kerosene markets, some concern is expressed over the effect of the mild weather and the possibility that tanker rates have not only reached their peak but may even recede from currently high levels. A protracted spell of weather that characterized the Thanksgiving holiday week end in the East would certainly result in a sharp curtailment from normal late-fall consumption and a contraction in demand on top of the substantial inventories held on the East Coast would undoubtedly weaken the market structure.

The tanker market which has been on an upward trend since late September may have reached the peak of its swift rise in the past week as irregular rates in the Gulf-to-north-of-Hatteras run were reported. Late last week a charter was reported consummated on the basis of 60 cents for gasoline which is 3 cents above the previous high but almost coincidentally another tanker was chartered on the basis of 54 cents per barrel for gasoline, a drop of 3 cents from the previously last-paid rate. Both boats are scheduled for December loading. A third charter was made on the 57-cent gasoline basis that had been in effect since early last week.

If the past week's charters signalize a leveling off in tanker rates, they will terminate the swiftest rise in the rates on record. In late September the rate on No. 2 fuel oil was 21 cents per barrel whereas the peak attained early last week was 65 cents per barrel, more than treble the rate of less than 8 weeks earlier. The peak reached last week, however, is still about 7 cents under the high of the 1939-40 season when an all-time high was reached.

Contributing factors to the apparent softening of tanker rates are the substantially higher stocks of fuel oil already on hand on the East Coast and the announcement of reduced railroad rates from the Midwest to the East Coast, scheduled to go into effect by at least one major carrier on December 20. The proposed new rail rates are higher than current Gulf-to-north-of-Hatteras tanker rates, but fuel oil could be delivered to intermediate points by rail under the proposed plan more cheaply than is now being done with fuel oil shipped from the Gulf Coast in tankers. The possible curtailment of an already well-supplied Gulf Coast market would have an adverse effect on prices there.

Refinery and terminal gasoline prices were unchanged in the eastern area last week with 72-74-octane material continuing at a range of from 5 to 5¼ cents per gallon. Evidence that retail prices remain unsatisfactory, however, is contained in the monthly American Petroleum Institute analysis which shows that retail prices of gasoline throughout the country averaged only 12.21 cents per gallon on November 1 as against 12.20 cents on October 1 and 13.65 cents on November 1, 1939. Inclusive of taxes, these prices were 18.11 cents, 18.10 cents and 19.07 cents, respectively.

The statistical position of the oil industry on the East Coast improved during the last week for which reports are available. These reports show that motor-fuel stocks on November 16 were down to 18,148,000 bbl., a decline of 571,000 bbl. from the preceding week and only 250,000 bbl. above the 1939 low. In view of the fair weather that maintained through the Thanksgiving holiday week end, a further draft on stocks that may bring them below last year's low point is in prospect.

Stocks of residual fuel oil experienced their most substantial reduction of the season in the week ended November 16 when they were reduced 465,000 bbl. to 12,114,000 bbl., which compares with 9,810,000 bbl. at a comparable period a year ago. Stocks of gas oil and distillates, however, increased 197,000 bbl. in that week.

The Gulf Coast market again experienced a dull week through the possible leveling off of tanker rates was viewed by some as a possible indication of improvement there. During the last half of October, the Gulf Coast Refiners Association reports, stocks of gasoline were reduced 274,682 bbl. to 2,482,029 bbl. November 1 stocks are reported to have consisted of 555,654 bbl. of aviation gasoline, 1,865,355 bbl. of motor fuel and 62,020 bbl. of high-octane-value blending naphtha. Heating-oil inventories were reported to have been built up somewhat but there were reductions in residual-fuel-oil stocks.

There was some encouragement for the Gulf export market in the report that Russia may enter

(Continued on Page 115)

Gulf Coast Markets

HOUSTON, Tex., Nov. 26.—Further advances the past week in tanker rates to the Atlantic seaboard are increasing the handicap imposed on Gulf Coast refinery markets. Fuel and burning oils continued firm but pending the ability of the strength of the East Coast markets to absorb all the increased transportation costs, improvement in the Gulf Coast prices is being forestalled.

Movement of fuels from Gulf Coast ports was slow the past week, partly a reflection of the increased tanker rates which tend to cause the East Coast trade to draw on supplies on hand rather than move in new material but Gulf Coast suppliers still are reported in good position and able to maintain their market at existing levels.

Prospects that the eastern trade soon will be forced to augment their supplies despite the high tanker rates, in view of the increasing seasonal consumption of these products, help to forestall any inclination of Gulf Coast refiners to make any concession in price.

Heavy fuels of the Bunker C grade are consistently quoted and held at 80 cents. The fact that material in cargo lots is not available at any less price than in ship's bunkers reflects the firmness of the market. No. 2 fuel is low at 3¼ cents, but is available at that figure.

Other fuels and burning oils, including kerosenes, also continued firm at the opening of the week despite the pressure of increased trans-

(Continued on Page 115)

A.P.I. Weekly Refinery Statistics

Week Ended November 23, 1940

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	17,587,000	12,249,000	17,235,000	527,000
Appalachian	91.0	3,130,000	351,000	569,000	111,000
Ind., Ill., and Ky.	90.2	13,856,000	3,442,000	5,543,000	562,000
Okla., Kans., and Mo.	76.9	6,308,000	2,175,000	1,469,000	241,000
Inland Texas	59.6	1,614,000	1,551,000	410,000	117,000
Texas Gulf	89.2	12,634,000	8,847,000	8,812,000	868,000
Louisiana Gulf	97.6	2,765,000	1,870,000	1,371,000	126,000
N. Louisiana and Ark.	51.5	434,000	529,000	334,000	48,000
Rocky Mountains	56.0	932,000	435,000	132,000	45,000
California	87.3	15,410,000	73,587,000	10,591,000	528,000
Total reported	86.2	74,670,000	105,036,000	46,466,000	3,173,000
Est. unreported	.....	5,430,000	1,835,000	1,045,000	337,000
*Est. total	.....	80,100,000	106,871,000	47,511,000	3,510,000
*Est. total previous wk.	.....	80,063,000	107,151,000	48,108,000	3,540,000
*Nov. 24, 1939	.....	75,980,000	111,207,000	38,402,000	3,510,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended November 9, 1940	261,631,000 barrels
Week ended November 2, 1940	263,820,000 barrels
Week ended November 11, 1939	230,037,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Note.—Crude-stock figures for November 16 delayed.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of November 26, 1940

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Incl. tax	Kero. tank wag.
Chicago, Ill.	15.6	13.6	4.5	10.0
Decatur	14.6	13.1	4.5	9.5
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.0
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.3
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	7.6
Grand Rapids	14.3	12.8	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	15.1	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.8	11.8	4.5	8.0
St. Louis*	15.2	13.2	4.5	9.0
St. Joseph	14.9	13.0	4.5	7.9
Wichita, Kans.	13.8	12.3	4.5	7.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Oct. 7, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 8.75 cents; 100-149 gal., 7.75 cents; 150 gal. and over, 7.25 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex fuel oil A, 1-399 gal., 5.75 cents; 400-799 gal., 4.75 cents; 800 gal. and over, 4.5 cents. Stanolex fuel oil B, 1-399 gal., 5.75 cents; 400-799 gal., 4.75 cents; 800 gal. and over, 4.5 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.5 cents; 1,000 gal. and over, 3.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Dlvided dlr.	Gasoline Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
Atlantic City	11.00	12.60	4.5	7.9
Newark	11.00	12.60	4.5	7.9
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.5
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.5
Danville, Va.	14.45	16.95	6.5	11.0
Norfolk	13.25	15.75	6.5	10.5
Petersburg	13.55	16.05	6.5	11.2
Richmond	13.55	16.05	6.5	10.5
Roanoke	14.75	17.25	6.5	11.0
Charles'n, W. Va.	14.05	16.55	6.5	12.6
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	16.85	6.5	11.8
Charlotte, N. C.	16.40	15.00	7.5	9.8
Hickory	16.95	18.45	7.5	10.3
Mt. Airy	16.80	16.00	7.5	10.2
Raleigh	16.15	16.00	7.5	9.5
Salisbury	16.45	14.50	7.5	9.9
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	11.5
Spartanburg	15.80	18.30	7.5	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Incl. tax	Kero. tank wag.
Atlanta, Ga.	14.0	14.0	7.5	9.0
Augusta	16.5	16.5	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	9.0
Mobile	15.5	15.5	9.5	8.0
Montgomery	18.5	18.5	9.5	10.0
Jackson, Miss.	16.0	16.0	7.5	9.0
Vicksburg	16.0	16.0	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.5	17.5	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	9.0
Louisville	15.0	15.0	6.5	8.5
Paducah	14.0	14.0	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
Philadelphia, Pa.	12.5	13.5	5.5	10.0
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
*Scranton	11.9	12.4	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
Albany	12.0	12.5	5.5	7.6
*Met. New York, Manhat., Bronx, Queens, Brklyn., Staten Island	11.9	12.0	5.5	7.9
Buffalo	12.4	13.4	5.5	7.7
Rochester	12.8	13.4	5.5	8.3
Syracuse	12.5	11.7	5.5	8.7
Portland, Me.	11.4	13.4	5.5	8.0
Manchester, N.H.	12.5	12.6	5.5	8.5
Burlington, Vt.	12.5	12.3	5.5	8.2
Boston, Mass.	10.4	11.4	4.5	8.0
Worcester	11.0	12.0	4.5	8.1
Hartford, Conn.	11.2	11.5	4.5	7.5
New Haven	10.9	11.1	4.5	7.0
Providence, R. I.	10.4	11.9	4.5	8.0

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	10.5
Grand Junction	16.5	5.5	12.5
Pueblo	15.5	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	14.5	5.5	11.0
Billings, Mont.	16.5	6.5	12.0
Butte	15.5	6.5	13.0
Great Falls	15.5	6.5	12.0
Helena	15.5	6.5	12.5
Salt Lake, Utah	16.0	5.5	14.0
Boise, Idaho	†18.6	6.5	16.0
Twin Falls	†19.6	6.5	16.5
Albu'que, N. M.	*16.0	7.0	9.5
Roswell	*14.0	7.0	8.0
Santa Fe	‡17.0	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Gasoline Dlr. tank wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	†11.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	16.00	18.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	11.0
Bristol	18.25	18.75	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	11.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.5
McCook	17.0	14.4	6.5	9.0
Norfolk	17.5	15.4	6.5	9.9
North Platte	17.8	15.5	6.5	10.2
Scottsbluff	17.4	14.5	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada

3-Star Imperial Gasoline

IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.5	8.0	17.0
Hamilton, Ont.	24.5	8.0	17.0
Winnipeg, Man.	27.5	7.0	22.5
Brandon, Man.	28.0	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

Tank-Wagon Changes

Standard Oil Co. of New Jersey reduced the dealer tank-wagon price on regular gasoline 0.5 cent per gallon November 15 at Charlotte, N. C. The company increased the range-oil and kerosene dealer-tank-wagon price 0.2 cent throughout New Jersey November 22. Tank-wagon fuel-oil prices were increased 0.5 cent per gallon November 13 at Baltimore, Md., and Washington, D. C. The 0.5-cent advance in fuel oil was extended November 15 to remainder of the Delaware, Maryland and District of Columbia. Standard of New Jersey advanced No. 2 fuel oil 0.25 cent in North Carolina November 22, following a similar advance in that state November 11, which also applied to No. 1 fuel, or range oil. Effective November 7, Standard of New Jersey advanced the tank-wagon price of No. 2 and No. 3 fuel 0.15 cent per gallon in southern New Jersey and 0.4 cent in northern New Jersey. Four days later, on November 11, points in southern New Jersey were advanced 0.25 cent a gallon to a state-wide price at that time of 6.5 cents.

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of November 26, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04¼	.04⅜
60 octane and below	.03¾	.04

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅝
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400	.03¾	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03⅞	.04⅛

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03¾	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03¾	.04⅛

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.06
72-74 octane	.05¾

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.05½	.07¼
54-58 U. S. Motor	.04½	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.05	.06½
Philadelphia	.05½	.07
Boston		.05½
Baltimore	.05½	.07¼
Charleston, S. C.	.06½	.07

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane		.04
70-72 octane	.03⅜	.04
68-70 octane	.03¾	.04
65-67 octane	.03⅜	.04

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02¼
Grade 18-55	.02⅝	.02¾

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55		.02⅜

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70	.02

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 l.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04	.04⅛
41-43	.03⅞	.04⅛

NORTH TEXAS—

41-43	.03⅞	.04

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.03⅞	.04

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.04⅞	.05⅛
45	.04⅞	.05⅛

CHICAGO (Based on Group 3)—

42-44	.04	.04¼
41-43	.03⅞	.04⅛

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.051	.055

GULF COAST (domestic)*—

41-43	.03⅞	.04

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03⅜	.03½
No. 3 zero to 10, 28-32	.03¼	.03⅜

NORTH TEXAS—

No. 1 prime white, 38-42	.03½	.03⅝
No. 1 straw, 38-40	.03⅜	.03½

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03¼	.03⅜

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03¼	.03½

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅞
No. 1 prime white, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03½	.03⅝
No. 3, zero to 15, 28-32	.03⅜	.03½

NEW YORK (Bayonne, N. J.)—

*No. 1	.051	.055
*No. 2		.045
*No. 4		.045

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02⅞	.03⅛
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH TEXAS—

U.G.I. gas oil, under 35	.02¾	.02⅞
No. 5 low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02¾	.03
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.50	.55

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.50	.75
10-17 (high sulfur)	.45	.65
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03¼	.03⅛
43-47 diesel	.03½	.03½
48-52 diesel	.03½	.03⅝
53-57 diesel	.03⅝	.03⅞
58-and-above diesel	.03⅞	.04
Diesel bunkers		1.50
Bunker C (bulk cargoes)		.80
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.046
28-30 diesel (lighterage 6¼c per bbl.)		1.85
28-30 diesel (tank cars)		.045
Bunker C (to ocean-going ships in N. Y. Harbor	1.15	1.25
Industrial fuel (tank cars)	.04	.046

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.18
150-160 D, 0-10		.13⅛
150-160 D, 10-25		.13
100-110 D, 0-10		.13
100-110 D, 10-25		.12½
Steam refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.14½
15 pour point		.13½
25 pour point	.12	.13
Steam refined:		
600	.07	.07½
650	.08	.08½
600 flash	.09	.09½
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.08½
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10
300-3½		.11
350-3½		.11½
400-3½		.12
500-3½		.12½
600-3½		.13
100-2½ paraffin oil, 10-25		.05¼
10-25 pour point:		
200-3		.08
250-3		.09½
280-3		.10
280-4		.09½

GULF COAST—

Pale oils:		
100-3	.05½	.05¼
200-3	.07⅛	.07¼
300-3	.07½	.07⅝
500-3½	.08¼	.08½
750-3½	.08⅝	.08⅞
1,200-3½	.08⅝	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅜	.08½
1,200-5-6	.08½	.08⅝

CALIFORNIA (moving to dom. market)

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07½	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11¼
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis., at 70° F., 3 color, 400-405 flash:	
Zero pour point	.22½
10 pour point	.21½
15 pour point	.20½
25 pour point	.19
200 vis., at 70° F., 3 color:	
Zero pour point	.24½
10 pour point	.23½
15 pour point	.22½
25 pour point	.21

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.03

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.02⅞	.03
124-126 (A.m.p.) w.c. scale	.02½	.03

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0560
128-130 (A.m.p.) wax	.0560	.0570
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.	.02⅞	.03
124-126 (A.m.p.) y.s.	.02⅞	.03
Petrolatum in barrels, carload lots:		
Dark green	.02125	.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05125
Snow white	.05125	.06000
Cream	.03375	.04125

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.03⅝
60-62 400		.03⅝
61-63 390	.03⅞	.04
64-66 375	.03⅞	.04

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05⅝
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.04	.04⅛

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:	
600 S.R. unfiltered	.16
630 S.R. unfiltered	.17
600 flash, S.R.	.18
650 flash, S.R.	.20
Bright stock:	
Light, 25 pour point	.20½

NEUTRAL OIL

200-3 color	.27
150-3 color	.25½

PARAFFIN WAX

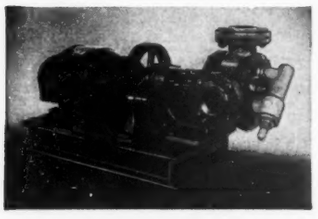
NEW YORK (prices per lb.)—

123-125 A.m.p.		.05600
125-127 A.m.p.		.05600
128-130 A.m.p.		.05850
133-135 A.m.p.		.06150
135-137 A.m.p.		.06400
Crude scale:		
124-126 w.s.	.02⅞	.03
124-126 y.s.	.02⅝	.03

EQUIPMENT PROGRESS...

Line of Heavy-Duty Pumps Announced by Viking

A new line of heavy-duty rotary pumps has been announced by the Viking Pump Co., Cedar Falls, Iowa, the pumps being either gear or V-belt driven, direct-connected or double-back geared and are available with steam-jacketed back flange and steam-jacketed or relief valve on head. The pumps are available in capacities ranging from 18 g.p.m. (at 1,200 r.p.m.) to 200 g.p.m. at 375 r.p.m. In still larger capacity pumps for heavy-duty service, a style pump is available in 300, 450, 750 and 1,050 g.p.m. The latter-style pump is mounted on a structural-steel base with fully enclosed back gearing and ready to accept any type of separate power unit.



In the accompanying illustration, the Viking back-geared-type pump is shown. Where it is necessary and desirable to slow the pump speed down beyond a 6-to-1 gear ratio, while using standard motors and engines, the double back-geared unit serves this purpose.

Many pumping applications are best handled with slow-speed pumps. This is particularly true when pumping heavy, viscous liquids and liquids which may contain a small amount of foreign matter. The life of the pump is prolonged and the service vastly improved with this reduced speed. In the illustration the top half of the gear guard has been removed to show the double back gearing, which in this case is enclosed in a single guard. Other double back-geared units are constructed with separate guards for each set of gearing.

TRADE LITERATURE

MORSE CHAIN CO., Ithaca, N. Y.—Bulletin R-40, a new catalog, engineering data book and price list on Morse roller chain. Book contains complete information on the construction of the channel-lubricated, interchangeable roller chain, details of adaptions and applications and tells how to select the correct chain for the drive. Also features illustrations and specifications of regular and special types of sprockets, with recommendations for their proper use.

BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa.—Technical bulletin No. 11-C, giving specifications for seamless tubular products. It contains specifications established for carbon-steel and alloy-steel tubes by the A.S.T.M., and by Babcock & Wilcox for high chrome and stainless alloy tubes. Specifications cover the manufacture, finish and workmanship, chemical and physical properties, tests, and permissible variations in weights and dimensions of tubes and pipe.

WORTHINGTON PUMP AND MACHINERY CORP, Harrison, N. J.—Bulletin S-500-B38, dealing with Worthington four-cycle, direct-injection, totally enclosed diesel engine. The bulletin describes the type DD diesel and gives specifications on integral parts of the engine.

LINCOLN ELECTRIC CO., Cleveland, Ohio.—58-page bulletin giving procedures for producing all types of welds in mild steel, for welding all metals used to any extent industrially and for applying surfacing metal to meet any type of wear-action in service. Properties of welds produced in various metals are given and typical welding applications are illustrated. A valuable feature of the bulletin is a chart serving as a guide for selection of electrodes for various applications, in addition to a discussion of flat, convex, and concave beads. An additional feature, which will be found helpful to all users of welding, is a 2-page illustrated section giving information and pointers on the proper use of modern shielded arc welding. A 10-page section covers the subject of surfacing with arc welding and includes a chart for selection of electrodes for particular applications, together with detailed procedures for this important branch of welding. Arc-welding accessories are illustrated and described in 8 pages of the bulletin. Of value to all users of welding, "The Lincoln Weldirectory" is available on request from the company.

DOUBLE SEAL RING CO., Fort Worth, Tex.—"Piston Ring Handbook for Engineers," a useful and timely book for engineers and operators, covering various piston-ring problems encountered in the operation of internal-combustion engines, steam engines, compressors and pumps, together with recommendations for piston-ring applications designed to overcome various operating difficulties. It is fully illustrated and contains engineering data and practical information, including tables and reference data valuable to the engineer and operator. Copies are available to engineers and operators of diesel equipment, steam plants, ammonia compressors, air compressors and other machines equipped with piston rings.

A. R. Zelt Made Vice President Of Oil Well Supply Co.

Announcement has been made of the appointment of A. R. Zelt as vice president of the Oil Well Supply Co. in charge of manufactured products. E. H. Roos, formerly manager of Wilson-Snyder Manufacturing Corp., succeeds Mr. Zelt as works manager of the Imperial Works plant of the Oil Well Supply Co., Oil City, Pa., and T. E. Regan succeeds Mr. Roos as manager of Wilson-Snyder at Braddock, Pa.

Mr. Zelt has been works manager of the Imperial Works plant for the past 10 years, and will continue his residence in Oil City where he is prominently identified with the civic and industrial life of the community. He is a native of Washington, Pa., and received his engineering degree from the Carnegie Institute of Technology at Pittsburgh. Previous to his association with Oil Well Mr. Zelt was employed by the American Rolling Mill Co.

Mr. Roos, a native of Wellsville, N. Y., has already taken up his residence in Oil City. He is a graduate mechanical engineer from Ohio State University. After a short period of employment with the Moore Steam Turbine Co. of Wellsville, N. Y., Mr. Roos entered the employ of Wilson-Snyder Manufacturing Corp. 17 years ago, and for the past 10 years has been manager of the company with headquarters at Braddock, Pa.

T. E. Regan is a native of North Dakota. After being graduated as a mechanical engineer at North Dakota State College, Mr. Regan devoted some time to graduate study and research with the Westinghouse company. He entered the Wilson-Snyder organization in 1929, has been superintendent for the past 9 years, and is now elevated to manager of Wilson-Snyder Manufacturing Corp. with headquarters at Braddock

Fred Casler Addresses Tulsa Nomads Club

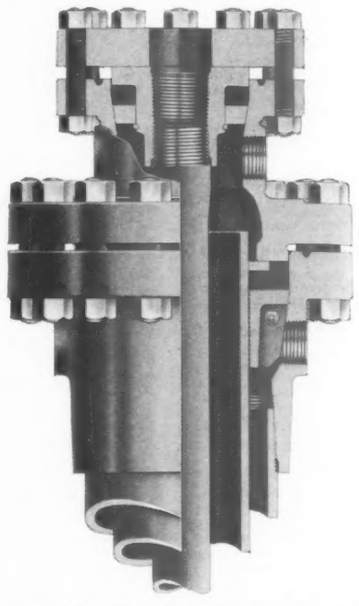
Fred Q. Casler of the Aero Exploration Co., Tulsa, was the principal speaker at the monthly dinner of Tulsa Nomads Club held at the Hotel Tulsa Monday evening, November 25. Mr. Casler outlined methods of promoting trade relations with South American countries. Several members of the club took part in the discussion following his talk.

Lloyd A Summers, divisional engineer with the Lago Petroleum Corp. located in the Lake Maracaibo area of Venezuela, who is spending a vacation period in the Mid-Continent area, was a guest at the dinner.

Cameron Announces Low-Pressure Casing and Tubing Heads

Cameron Iron Works, Inc., Houston, Tex., which has developed numerous oil-tool specialties for the control and completion of high-pressure wells, has entered the low-pressure field with a new series of low-cost, 1,000-lb. working-pressure well heads.

In announcing its line of low-cost, low-pressure casing and tubing heads, the manufacturer points out that several of their mechanical features have only been available heretofore in the higher pressure, more costly well heads. Mass-production methods of manufacture, made possible by the company's modern plant at Houston, accounts for the record-low price of these new casing and tubing heads, it is claimed.



The accompanying cross-section drawing of an assembly of a Cameron low-pressure casing and tubing head illustrates the following mechanical features: (1) Forged-steel casing-head housings; (2) standard A.P.I. flanges on both casing head and tubing head to permit the use of blowout-preventer equipment if required; (3) slip suspension of casing; (4) neoprene-asbestos packing above the slips, which may be tightened externally at any time; (5) self-sealing tubing hanger with neoprene-asbestos packing, which also may be tightened externally at any time; (6) nested design which results in an extremely low overall height and thus conserves cellar space.

In addition to the Type "UA" self-sealing threaded suspension-type tubing hanger illustrated, three additional types of tubing hangers are available, all of which are readily interchangeable in a single tubing-head housing; Type "R" tubing-collar type suspension; Type "Q" slip suspension; and Type "RA" slip suspension with packoff below the slips.

Rader Returns From California

C. M. Rader, manager of the Mid-Continent division of Kobe, Inc., has returned to his office in Oklahoma City, Okla., after spending several weeks at the general offices at Huntington Park, Calif., conferring with company executive, engineering, and laboratory staffs. Mr. Rader also took the opportunity of inspecting many of the Kobe hydraulic pumping plants operating throughout the various California oil fields.

Improved Asphalt Tile Announced By Philip Carey Company

The research laboratories of the Philip Carey Manufacturing Co., Lockland, Cincinnati, Ohio, have developed an improved asphalt tile which is said to have a smoother and more attractive surface and to possess specific advantages for use both as an industrial flooring and for protection of roof areas which are used for recreational or other purposes.

This new product, which is marketed under the trade name of Elastite asphalt tile, is a compound of asphalt and mineral filler, reinforced with asbestos fibers, densely compressed and die-cut to size, and is now approved by the Underwriters' Laboratories for "Class A" built-up roofing, when applied in accordance with their instructions, on slopes up to and including 1 in. to the horizontal foot. It should not be confused with asphalt paving blocks or asphalt floor mastics.

Carey Elastite asphalt tile is manufactured in standard black and standard red, in ⅛-in. thickness, and in sizes 12 by 12 in. and 12 by 24 in. This product is said to be extremely dense, tough, highly resistant to compressive loads, dustless, and quiet under wheel traffic. While relatively hard, it is not rigid or unyielding, thereby contributing to workers' efficiency. It may be applied to any properly prepared subbase and is ready for use as soon as laid.

Other advantages claimed for it are: (1) High resistance to fire. Having a flash point of approximately 700° F., it will not create a fire hazard. (2) Dielectric strength. Its breakdown voltage of over 30,000 volts indicates an electrical insulating value approximately equal to that of marble and much greater than that of slate. (3) It is vermin and rotproof. (4) Practically nonabsorbent in the presence of water, thus providing protection against dampness which may exist under the subbase.

Guiberson Develops New Type Rotary Drilling Head

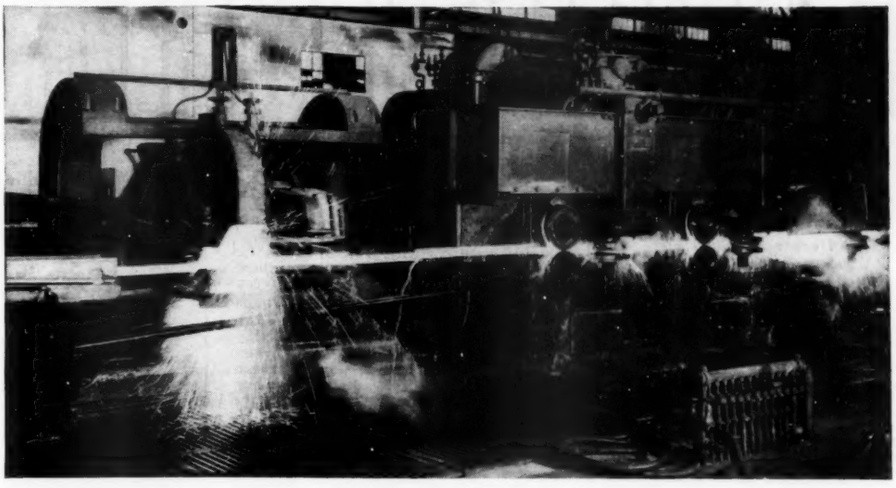
The wide acceptance and successful performance of Guiberson drilling heads in well completion and clean-out work has proven the capability of this tool. To further meet the demands of the oil industry the Guiberson Corp., Dallas, Tex., has developed its Type H rotary head.

Newest feature is elimination of a separate rotary table, because the Type H head incorporates the essential elements of a rotary table—kelly bushing, slips and slip bowl—as integral parts of the head. The kelly is rotated by a kelly bushing and core which are revolved by a special built-in shaft. This drilling head provides a positive, leakproof packoff while drilling and also when running drill pipe or tubing. The same principle of packoff is used as employed in Type E and Type G drilling heads.

A rubber packing medium effects a tight seal around any standard kelly, either square, hexagon or fluted, from 2⅛ to 3½ in., or tubing, drill pipe, collars and tool joints to a maximum outside diameter of 3½ in. The packoff is equally efficient either in running in or coming out of the hole. Characteristic of all Guiberson drilling heads is the built-in blowout preventer and stripper combination.

Power can be delivered to the drive shaft through a flexible coupling or universal joint from a gas engine, electric motor or draw-works shaft. Direct transmission or V-belts can be used, depending entirely on the speed of the driving element and the speed desired of the drilling head. The drive shaft is provided with a 12-tooth pinion which drives a 48-tooth ring gear on the drilling-head core, providing the head with a 4-to-1 gear ratio. The head is sturdily constructed, light in weight, small in size (only 41½ in. tall), easy to move and handle.

SECOND UNIT ADDED AT BETHLEHEM BUTT-WELDING MILL



A second unit has recently been added to the continuous butt-welding mill at the Maryland plant of Bethlehem Steel Co., at Sparrows Point, Md. The unit, designed for production of pipe in sizes from 1 to 4-in. nominal diameter, in standard and extra-heavy weights, rolls skelp from 6 to 16 in. wide, up to 0.380 in. thick. Based on 4-in. pipe the maximum rated capacity is 25 tons of skelp per hour. The skelp is supplied in coils from 30-in. to 44-in. diameter, weighing approximately 900 to 2,500 lb. each.

Except for minor variations in design and differences in size the new unit is essentially identical with the first unit which was described in the June 13 issue of The Oil and Gas Journal. The skelp is uncoiled and fed to an electric flash welder. It then passes over a double-looping bed, with a 150-ft. primary and a 35-ft. secondary loop, to a 157-ft. long heating furnace which has a heating chamber 2 ft. 7 in. wide at the top and 22½ in. wide at the bottom. The furnace is equipped with 334 nozzle-mixing burners spaced at 9 in. centers the full length of the furnace, except for a 15-ft. preheating zone at the charging end. The burners are arranged in groups of 11, connected to a common header. Total burner capacity is about 140,000 cu. ft. of 500 B.t.u. mixed gas per hour, delivered at 4 to 8-oz. pressure.

The combustion air is preheated to 900° F. in six silicon carbide tubular recuperators, two for each heating zone.

The heated skelp is drawn through a series of six roll passes, consisting of three pairs of horizontal and three pairs of vertical rolls. This is followed by a flying hot saw where the pipe is cut into predetermined lengths, up to 50 ft. The cut lengths pass over a cooling rack and are conveyed to a descaling and sizing mill. After passing over a second cooling rack the pipe is ready for the regular finishing operations.

With the new unit in operation the mill is producing continuously butt-welded pipe in all standard sizes from ⅜-in. to 4-in. nominal diameter.

Ordinary Differential Unsuited For Winter Driving

The ordinary differential is inadequate for slippery driving conditions encountered in cold weather and for all driving conditions where mud, sand, ice, or snow prevail, states A. F. Knoblock, president of the Thornton Tandem Co., Detroit, Mich. "The primary essential of positive traction cannot be secured with the ordinary differential except under ideal conditions," states Mr. Knoblock.

"The ordinary differential is the one piece of mechanism on the automobile and motor truck which has not been improved in the last 25 years. With the ordinary differential each rear wheel acts as the fulcrum for the pull of the other. If one rear wheel has no traction and slips the other rear wheel cannot move the vehicle. Neither wheel can pull more than the one with the worst amount of traction.

"The Thornton automatic-locking differential is designed to give working traction when standard drives are helpless. This is important at this time of year when we are entering a new winter season. With the Thornton differential spinning of one wheel is eliminated because both rear wheels must rotate when power is applied. This means that trucks or buses equipped with this unit can pull out of deep mud holes or over slippery treacherous surfaces with ease and safety under circumstances where standard differential drives would be hopelessly stalled."

New Line of Globe Forged Blade Drag Bits

A new line of forged blade drag bits in two-blade, three-blade, and four-blade types, in a complete range of sizes, is announced by J. H. Howard, vice president of Globe Oil Tools Co., of Los Nietos, Calif.

According to the manufacturer, the blades of these new bits are drop forgings of a selected alloy steel, heavily set with borium and faced with tube borium. The bit body is special alloy steel which is very adaptable to welding, and is heat treated for exceptional durability. All heat treating is handled in the Globe plant under the supervision of the metallurgical department, and every blade is given an individual Brinell test to insure hardness.

Illustration shown is two-blade type with one circulation hole per blade

Of the many features claimed by the manufacturer, particular emphasis is placed on the relative ease with which worn blades are replaced and the bit bodies used for subsequent runs. This is of special interest to foreign operators. Bulletin 25, illustrating and describing the new bits, may be obtained by writing direct to the manufacturer.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees"—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

J. PRESTON SWECKER
PATENT LAWYER
INFRINGEMENT LITIGATION
Patents, Searches, Opinions, Trade Marks
OFFICES:
911 Panhandle Bldg., Wichita Falls, Tex.
National Press Bldg., Washington, D. C.

CECIL L. WOOD
PATENT LAWYER
Patents, searches and opinions
Infringement practice
Experience in Oil Equipment
322-324 Insurance Bldg., Fort Worth, Tex.
213 Kellogg Building, Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

NEW MEXICO
STATE OIL AND GAS LEASES
Another block in a NEW HOT SPOT. This is a good bet. Buy direct and save those dollars. No middle man to pay; no salesman to bother you. Better to buy a little of something, than a whole lot of nothing.
HARRY S. WRIGHT
New Mexico State Lessee
Farmington, New Mexico.

SPECIALIZED Geophysical investigations conducted for petroleum promise. In touch with many opportunities to and for development of drilling blocks. P. O. Box 364, Fort Worth, Texas.

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, also tracts of proven Fluorspar and zinc deposits. Reports on request. W. P. HARLEY, Bowling Green, Kentucky.

NEW MEXICO
Oil and Gas Leases and Royalties.
ROY G. BARTON, Hobbs, N. M.

PRODUCTION FOR SALE BY COMPANY OWNER

11 Bartlesville sand wells on 180 acres Nowata County, Oklahoma. Pumping $200.00 per month income. All acreage proven. Good lease house and water. Ideal proposition if you desire to live upon and operate. Brokers and Junk Dealers need not inquire. $7,500.00 Cash. Box A-201 The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—Oil and gas leases Kentucky shallow field, adjoining producing oil and gas wells. Some leases adjacent to contracted Drilling Block. Excellent opportunity to make real money from small investment. Address P. O. Box 2117, Washington, D. C.

HOMER L. FITCH, GEOPHYSICIST AND LOCATION ENGINEER
WHY drill dry holes? Our method only locates structures which contain oil or gas. Locations made by us will produce or no pay. Drawer 711, Brownsville, Texas.

CRANE CO., oil possibilities, cheap fee land, 3 mi. E Ward Gulf-Western drilling. J. G. SMITH, 215 Littlefield Building, Austin, Texas.

ATTENTION DRILLERS! 25000 acres under lease. Block for sale or development N. E. Miss. Geologist report A-1 Structure. Good proposition for major Co. or wildcat operator. Wire, Phone or Write T. Y. Johnson, Box 357, Starkville, Miss.

WANT small rotary to drill 1500 feet in proven territory on interest deal in central Oklahoma. Ted E. Ferren, 113½ East 17th St., Falls City, Nebraska.

Leases and Drilling Blocks

1,000-ACRE COMMERCIAL OIL LEASE in heaviest Texas trend with 1,250 foot well—8-inch casing set. Several of best geologists predict SURE PRODUCER. Will sell, trade or give an interest to finish well. K. W. Wilson, Box 419, Belton, Tex.

Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders in Oil and Royalty Companies. Personnel lists of every branch of oil industry. All by States. We buy lists. New catalogues ready. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Geophysical Service

ATTENTION. Why not locate Oil? A dry structure is not profitable. Unless we locate the Oil and Gas for you you pay us nothing for the survey. Maps and written reports furnished free. A Direct Geophysical Method that you can understand. Write Gravitational Selector, 14957 Lakewood Heights Boulevard, Lakewood, Ohio.

LOCATE OIL — Geochemistry is now recognized as the most direct method of finding oil. Our service and price will please you. Write Frank Pritchard, 610 Petroleum Bldg., Fort Worth, Texas.

Survey Service

REMEMBER EAST TEXAS
When all other methods fail, employ my divining or dowsing method. If oil exists this method finds it. Faults, broken treacherous areas accurately defined. Our Watson #2, first producer Wilmington, Calif., field, located by this method. More reliable than mechanical geophysics. Ask any unbiased oil authority. Many years' experience. A wise man investigates. George Miller, 1548 Post, Torrance, California.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Financing

JOHN MORRIS, Box 5411, Philadelphia, studied records 5000 financial houses. Found only 191 buy new issues. $4.00.

WANTED—Oil loans $250,000 to $5,000,000. Low rates, long terms. L. A. (Pat) Casey. 511 Lexington Ave., New York; Esperson Bldg., Houston.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

ROYALTY under TEST WELLS drilling by Major Oil Companies seeking to open NEW, DEEP OKLAHOMA OIL FIELDS. WE HANDLE NOTHING PROMOTIONAL. Ask for Current Prices and Schedules B. W. E. Cook, Wholesale Royalty Dealer, Perrine Bldg., Oklahoma City, Okla.

WE MAINTAIN A MAKET FOR REGISTERED DEALERS IN ALL FORMS OF OIL INVESTMENTS
FIRST DEPENDABLE OIL CORP.
522 Fifth Ave., New York, N. Y.

For Sale—Maps

1940 OIL AND GAS FIELD MAP
Texas, Eastern New Mex. Price $1.00.
Wildcat Map $3.00 Published monthly
ZINGERY OIL MAP CO., Fort Worth, Tex.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co. 115 S. Cinn. Tulsa, Oklahoma.

Situations Wanted

PETROLEUM Engineer, Geophysicist, and Geologist, with twelve years' experience; desires connection with a reliable oil company. Box A-241, The Oil and Gas Journal, Tulsa, Okla.

CHEMICAL Engineering degree received last June. 24 years old, single, good health. Desire to make career in the oil industry. Opportunity for advancement more important than initial salary. Box A-240, The Oil and Gas Journal, Tulsa, Oklahoma.

CHIEF ENGINEER of leading builder of gas engines and compressors. Owing to the sale of the company, am interested in connection as designer of engines and compressor stations, or in charge of operations. Address Box A-252, The Oil and Gas Journal, Tulsa, Okla.

MATERIAL and Supply Man seeks position in charge of Oil & Gas Field Supplies. Familiar in drilling, production and pipe line work. Also can assume charge of Commisary purchases. Best of references, can give bond. Nothing promotional. Address Box A-251, The Oil and Gas Journal, Tulsa, Okla.

CERTIFIED PUBLIC ACCOUNTANT Employed as senior by national public accounting firm desires connection with corporation or private concern. University graduate, four years of oil and drilling company accounting experience; six years of public accounting, auditing and income tax work. Industrious, studious and personable. Age 32; married; two dependents. Box A-250, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

C. S. THORNTON, please write us again. Perfection Clay Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan

Equipment Wanted

WANTED a used portable drilling outfit. Send me complete information and cash price. D. L. Williams, 723 S. Broadview, Wichita, Kansas.

For Sale—Equipment

FOR SALE

30-TON S/G LIMA GASOLINE, 0-4-0 SWG. LOCO. NEW 1931, GOOD COND, ROLLER BEARING. Immed. Delivery. SEND US YOUR INQUIRIES FOR ANY KIND OF LOCOMOTIVES.

IRON & STEEL PRODUCTS, INC.
13412 S. Brainard Ave.
Chicago, Ill.

"Anything containing IRON or STEEL"

TWO WELL SERVICING UNITS, one 30 and one 60 model Caterpillar tractors with Cardwell and Hopper winches respectively, A-1 condition, priced reasonably with terms. Paul Rutledge, 424 N. Cincinnati, Tulsa, Okla.

REFINERY GATE VALVES
Reconditioned and Tested
STEEL and CAST IRON
O.S.&Y. Flanged and Screw End
ALL STANDARD MAKES
Largest Stock in Midwest
We save you half
West Tulsa Pipe and Supply Co.
L.D. 835 P.O. Box 1865
TULSA, OKLAHOMA

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

FOR SALE

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.
300 sets 3" A.P.I. tool joints.
10,000 Ft. 7" O.D. 26# seamless casing, once run.
15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.
In addition to the above we have 20,000 Ft. of 6" screw line pipe in Oklahoma; also drilling rig capable of drilling to 6500 feet, complete stock of line pipe, casing, drilling and pumping equipment.

Wire, Write or Phone for Prices.

Louisiana Iron & Supply Co.
Shreveport, La.

FOR SALE—USED BOILERS
3 90HP-225SWP Acme Oklahoma City
LUCEY PRODUCTS CORPORATION
TULSA

YOUR dependable and cheapest source of supply!
Tank & Freight Cars; any kind
Tank & Freight Car Repair Parts; all kinds Locomotives; all types
Relaying Rails
Perhaps *we* can supply your requirements and — immediately!
OTHER MACHINERY AND EQUIPMENT TOO!
Destination inspection if desired!
IRON & STEEL PRODUCTS, INC.
13412 S. Brainard Ave., Chicago, Ill.
"Anything containing IRON or STEEL"
Ask to be placed on our various mailing lists.

FOR SALE: At our Oklahoma City warehouse slightly used Cardwell KS DHS skid type oil well servicing unit equipped with DHK Waukesha motor. I. T. I. O. Co., Bartlesville, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

COMPLETE 6500 BBL. TOPPING AND CRACKING PLANT
BARNSDALL REFINERY—OKMULGEE, OKLAHOMA
2500 BBL. KELLOGG CRACKING UNIT—4000 BBL. TOPPING
Will sell all or any part—Will quote "As is",
Dismantled and loaded or Re-erected your site
"Send Us Your Inquiries"

SONKEN-GALAMBA SUYPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE
ANY QUANTITY
NEW SEAMLESS STEEL COUPLINGS
400—5½" O.D., 8 round thread x 6¾" long, Casing at . . . .55c each
300—4", 8 thread x 4⅝" long, Line at . . . . . 55c each
1000—13" O.D. (12½" Pipe) 8-V thread, x 8¼" long, Line at $1.65 ea.
RECONDITIONED PIPE
30,000 feet 12", 50 lb. at $1.25 per foot
100,000 feet 6" Std. at .38 per foot
All of the above F.O.B. Philadelphia District, subject to prior sale. Pipe in lengths 18' 0" and longer, plain ends.
EASTERN PIPE SUPPLY COMPANY
1424 N. NINTH STREET,
PHILADELPHIA PENNA.

ONE 40 H.P. Type P.S. heavy duty Superior gas engine in A-1 shape. Has diesel attachments with straightway clutch, pump and lubricator. Wolfson Pipe & Supply Company, Wichita Falls, Texas.

FOR SALE—One gasoline rig with 2 Mack 165 H.P. dual-ignition motors, and 4000 ft. 4 inch drill pipe. All in excellent condition. KILGORE MACHINE SHOP, Kilgore, Texas.

TRACTORS
Caterpillars, crawler type, size "35," $375; size "65" with nigger-head winch, $750; Caterpillar RD8 with bulldozer, $2000; Allis-Chalmers Model L with bulldozer $1750. Guaranteed, slightly used. O. C. Evans, Mt. Sterling, Ky.

TRUSTEE'S SALE IN BANKRUPTCY
In U. S. District Court, Western District of Oklahoma
IN RE: STERLING REFINING COMPANY, NO. 5959 IN BANKRUPTCY

I, D. E. Hodges, Trustee of the Sterling Refining Company, bankrupt, will sell the assets of Sterling Refining Company, bankrupt, at the U. S. District Court Room, Post Office Building, Oklahoma City, at 1:00 o'clock P. M. on December 10, 1940, in parcels or as an entirety, for cash, subject to approval and confirmation of U. S. District Judge. Assets include pipe line system in Oklahoma City oil field, and refinery buildings, improvements, machinery and equipment at refinery site on leased ground located on N side of Rock Island RR Tracks east of Eastern Avenue in Oklahoma City, office building, laboratory building, pump house, boiler house, continuous treater, tankage, stills, towers, boilers, pumps, loading rack, water well and electrical pumping equipment, warehouse, contents of all buildings, fencing, etc. Sealed bids may also be submitted for any parcels of the property or as an entirety to be opened at date, time and place of open sale. Property may be seen at the refinery (watchman in charge) and bids submitted to D. E. Hodges, Trustee, Legal, Dept., Phillips Petroleum Co., Bartlesville, Okla., or in care of Clerk of U. S. District Court, Oklahoma City, or in care of L. W. Pratt, Attorney for Petitioner, 720 World Building, Tulsa, Oklahoma.

November 25, 1940

D. E. Hodges, Trustee,
Sterling Refining Company, bankrupt.

FOR SALE—Askania Vertical Magnetometer rectangular type, complete and with 180 degree stop tripod. Good condition and ready to use. P.O. Box 348, Taylor, Texas.

NOTICE — CABLE-TOOL CONTRACTORS, Save money; good used wire lines. All sizes up to 5,000 ft. long. See us before you buy. General Tool & Supply Co., P O. Box 4387, Oklahoma City, Oklahoma.

ONE 7' x 12' two-door steel tool house. One 4-in-line roller bearing crown block with 36" manganese steel sheaves on 20" beams. A-1 shape. 1300 Ramsey Tower, Oklahoma City, Oklahoma.

FOR SALE
Williams pipe threading machine. Cuts from 2" to 8¼". Dies all sizes, and all threads complete. Machine now in operation. Price $500.00 cash.
M. J. REGAN, Coffeyville, Kansas.

PUMPING UNITS FOR SALE
1—Emsco with Blue Streak Motor.
1—Foote Bros. Gear Box Unit with Stroke Posts—4 well hook-up
Located in Joinerville, Texas. Call G. R. LeFever, 252J, Overton, Texas, or 9F4, Turnertown, Texas.

FOR SALE—Cheap, 4—4" x 1" x 6" anchor clamps. Indian Territory Illuminating Oil Co., Bartlesville, Okla.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the November 7 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.15
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.00

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Hill, California* Signal	Oklahoma, Kansas	Coast, Texas Gulf
14-14.9	$0.65	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective Feb. 1, 1940.

New York Markets

(Continued from Page 109)

the market there for additional gasoline supplies. Russian purchases of gasoline in the United States are reported to be currently very heavy. In the last months for which figures are available, August and September, the Soviet took 484,170 bbl. and, it is reliably reported, plans to take almost double that amount in the final quarter of this year.

The wax market, which has shown some signs of improvement this fall, gave indications of weakness last week when lower quotations were reported on several grades of fully refined wax. Crude scale, both white and yellow, apparently is firm, however, and continues to be quoted at from 2⅞ to 3 cents per pound in both domestic and export markets. The lower quotations reported last week affected only the higher-melting-point grades while the others were unchanged.

Gulf Coast Markets

(Continued from Page 109)

portation costs to the East Coast; with kerosenes, however, there are only limited sources of supply.

Little can be said about gasolines, for which new demand, as well as inquiries, is inactive. Quotations are dominated in every instance by the immediate pressure on individual refiners to move material rather than on any general market structure.

Mississippi and Southeast

(Continued from Page 103)

4-7n-4w, drilling 7,100 ft., no report. Magnolia and Exchange 1 Paxton-Brown, C S½ S½ 12-14-4e, drilling salt 5,355 ft.

Yazoo County

Arcarea Reserve Co. 1 J. G. Holmes, SE SE 22-12n-1e, T.D. 5,616 ft., S.D., plan to deepen.
Joe Dawson 1 J. L. Wilson, SE SE SW 30-12n-3e, T.D. 4,915 ft., tested salt water, oil in Wilburn sand, S.D.

MISSISSIPPI FIRST REPORTS

Tinsley—Yazoo County

Union and Magnolia 5 Robinette, SE NE 19-10-2.

GEORGIA

Rose & Ray are reported to be planning the drilling of two wildcats in Coffee or Ware counties, between the towns of Waycross and Douglas, southern Georgia, for R. L. Taylor of Philadelphia, who holds an estimated 200,000 acres in the area. The operators' 1 Fowler in Treutlen County near Soperton is still shut down awaiting title work before an oil show reported at 2,135 ft. is tested.

GEORGIA DRILLING REPORT

Treutlen County

Rose & Ray 1 James Fowler, 6 mi. NE Soperton, S.D., titles, 2,135 ft.

ALABAMA DRILLING REPORT

Fayette County

B. L. Fillingame 1 T. Harbin, NW SW 3-16s-12w, T.D. 1,345 ft., S.D., plan to deepen.

Franklin County

E. O. Heath, Jr., 1 W. O. Hester, SW SW 4-6s-12w, no report, drilling 217 ft.

Madison County

J. L. Caldwell et al 1 Joe McCord, NW SE SE 30-1s-2e, S.D. 105 ft.
W. W. Newman, Tr., 3 W. P. Nichols, SE 35-6s-2e, drilling 274 ft., slight show oil.

Walker County

Champlin Oil & Ref. Co. 1 Galloway Coal Co., 12-13s-10w, drilling lime 3,880 ft.

INDEX TO ADVERTISERS

A

Abercrombie Pump Co.
AC Spark Plug Division of General Motors Corporation
Acme Fishing Tool Co.
Aero Exploration Co.
Air Reduction Sales Co.
Ajax Iron Works
Alco Products Division of American Locomotive Company
Allis-Chalmers Mfg. Co. 4
Allison, R. J.
American Blower Corporation
American Bosch Corporation
American Cable Division of American Chain & Cable Co., Inc.
American Cast Iron Pipe Company
American Hoist & Derrick Co.
American Iron & Machine Works Back Cover
American Locomotive Company, Diesel Engine Division
American Meter Company
American Roller Bearing Co.
American Rolling Mill Co., The
American Steel & Wire Company
Armstrong Bros. Tool Co.
Armstrong Machine Works 94
Ashcroft Gauge Division 99
Athey Truss Wheel Co.
Auer, C. L., and W. W.
Austin-Western Road Machinery
Axelson Manufacturing Company

B

B and M Construction Corp.
Baash-Ross Tool Company
Babcock & Wilcox Tube Company, The
Badger & Sons Co., E. B.
Baker Oil Tools, Inc.
Baldwin-Duckworth Division of Chain Belt Company
Bantam Bearings Corp.
Baroid Sales Division, National Lead Company 60
Barret, William M., Inc.
Beaird Corporation, J. B.
Bethlehem Supply Company
Bethlehem Steel Co. 5
Braden Steel Corporation
Brance-Krachy Co., Inc.
Brauer Machine & Supply Company
Brewster Company, The
Bridgeport Machine Company, The
Bristol Company, The
Broderick & Bascom Rope Co. 9
Brodie Co., Ralph N.
Brown Instrument Company, The
Bruning, Charles Co., Inc.
Buck Clamp Company
Buckeye Traction Ditcher Co.
Bucyrus-Erie Co.
Buda Co., The
Burgess Battery Co.
Butler Manufacturing Co.
Byron Jackson Co.

C

Cable, Jo H.
Cameron Iron Works, Inc.
Cardwell Mfg. Co., Inc. 2
Carey Company, The Philip
Carnegie-Illinois Steel Corporation
Cast Iron Pipe Research Association, The
Caterpillar Tractor Co.
Cavins Company
Century Electric Company
Cessna Aircraft Company
Chain Belt Company
Chaplin-Fulton Mfg. Co., Inc. 99
Chapman Valve Mfg. Co., The
Chevrolet Motor Division, General Motors Sales Corporation
Chicago Bridge & Iron Company 81
Chiksan Tool Co. 94
Clark Brothers Company
Classified Advertising 114-115
Cleveland Trencher Company
Climax Molybdenum Company
Columbia Steel Company
Columbian Steel Tank Co.
Continental Motors Corp. 90
Continental National Bank of Fort Worth
Continental Oil Co. 11
Continental Supply Company, The 52
Cooper, Fred E.
Cooper-Bessemer Corp., The
Core Laboratories, Inc.
Crane Co. 7
Cummins Engine Co.
Crutcher-Rolfs-Cummings
Curtin, W. H. & Co., The

D

D & M Machine Works 95
Darling Valve & Mfg. Co.
Davis Regulator Mfg. Co., The
Dayton Rubber Mfg. Co., The
Dearborn Chemical Co.
Dempsey-Wilson Construction Co.
Diamond Chain & Mfg. Co.
Dodge Division, Chrysler Corporation
Dowell Incorporated 16
Dragon Mfg. Co., The
Dresser Mfg. Co., The
Drilling Equipment Directory 95
Duff-Norton Manufacturing Co., The
Du Pont de Nemours & Co., Inc.
Duramettallic Corp.

E

Eagle-Picher Lead Co.
Eastman Oil Well Survey Co.
Economy Electric Lantern Co.
Elastic Stop Nut Corp.
Electrical Facilities, Inc.
Emsco Asbestos Company 94
Emsco Derrick & Equipment Company
Engineering Laboratories, Inc.
Ensign Carburetor Company, Ltd.
Ethyl Gasoline Corporation

F

First National Bank of Fort Worth
First National Bank in Houston
First National Bank & Trust Co. of Tulsa, The
Fisher Governor Company
Fluid Packed Pump Co.
Fluor Corporation, Ltd., The
Ford Motor Co.
Fort Worth Chamber of Commerce
Fort Worth Clearing House Association
Fort Worth National Bank, The
Foster Wheeler Corp.
Foxboro Mfg. Co., The 8
Franks Mfg. Co.
Frick-Reid Supply Corporation

G

Gardner-Denver Company
Garlock Packing Company, The
Gaso Pump & Burner Mfg. Co.
Gasoline Products Co., The
Gates Rubber Co., The
Gatke Corporation 95
General American Transportation Corporation—Terminal Division
General Electric Company
General Paint Corporation
General Power, Inc.
Geological Scientific Service Company
Geophysical Service, Inc.
Gilmer Company, L. H.
Girdler Corporation, The
Glidden Company, The
Goodall Rubber Co.
Goodrich Company, B. F., The 3
Goodyear Tire & Rubber Co.
Gott, H. P., Mfg. Co. 102
Graver Tank & Mfg. Co., Inc.
Gray Processes Corporation, The
Great Lakes Steel Corporation
Green Head Bit & Supply Co.
Gulberson Corporation
Gulf Oil Corp.
Gulf States Utilities Co.
Gustin-Bacon Mfg. Co. 63

H

H & M Pipe Beveling Machine Co.
Halliburton Oil Well Cementing Co.
Hanlon-Buchanan, Inc.
Harley Sales Co.
Harnischfeger Corporation
Harrisburg Steel Corporation
Hazard Wire Rope Division of American Chain & Cable Co., Inc.
Hewitt Rubber Corp.
Hill-Hubbell & Co.
Houston Engineers, Inc.
Houston Oil Field Material Co.
Houston Pipe Appliance Co.
Hughes Tool Co. Front Cover
Humble Oil & Refining Co.
Hydril Co.

I

Independent Exploration Company
Industrial Engineering Co.
Inferno Co., The
Ingersoll-Rand Co.
International Harvester Co.
International Nickel Company, Inc. The

J

Jadson Motor Products Company
Jarecki Manufacturing Company
Jensen Brothers Manufacturing Co. 101
Jerguson Gage & Valve Co.
Johns-Manville Corporation
Jones Company, The S. M.
Jones & Brooks, Inc.
Jones & Laughlin Steel Corporation

K

Keeley Institute, The
Kellogg, M. W., Company, The 15-46
Kennedy Valve Mfg. Co., The
Kerotest Manufacturing Company
Keuffel & Esser Co.
Key Company
Kobe, Incorporated

L

Laminated Shim Company, Inc.
Landis Machine Company, Inc.
Lane-Wells Company
Larkin Packer Company, Inc. 50
Layne & Bowler, Inc.
Leeds & Northrup Co.
Le Roi Company
Leschen, A., & Sons, Rope Co.
Lincoln Electric Company, The
Line Scale Co., Inc.
Link-Belt Company
Lockheed Aircraft Corporation
Lone Star Cement Corporation 49
Long, S. A., Co., Inc.
Lucey Export Corporation
Ludlow Valve Mfg. Co., The
Lufkin Rule Co. 69
Lummus Co., The
Lunkenheimer Co., The

Mc

McEvoy Company
McGregor Working Barrel Company 103
McKissick Products Corp.

M

MacClatchie Manufacturing Company 94
Macwhyte Co.
Magnolia Airco Gas Products Co.
Maloney Tank Mfg. Co.
Manhattan Rubber Mfg. Division
Manning, Maxwell and Moore, Inc. 99
Marley Company, The
Marmon-Herrington Co., Inc.
Marsh, James P., Corp.
Martin-Decker Corp.
Mayfair Hotel 103
Medart Company
Meehanite Research Institute
Merco Centrifugal Co.
Merco Nordstrom Valve Co.
Mercoid Corporation
Metric Metal Works
Mid-Continent Engineering Co., Inc.
Mid-Continent Supply Company
Midwest Piping & Supply Company, Inc., The
Miller Sand Pump Co.
Mission Mfg. Co., The 70
Monsanto Chemical Company
Morse Chain Company
Murray Rubber Company

N

National Bank of Tulsa 18
National Carbon Co., Inc. 86
National Steel Corporation
National Supply Co., The 66-67
National Transit Pump & Machine Co.
National Tube Co.
Nelson, J. B.
New Bedford Cordage Co.
Newman, Hender & Co., Ltd.
Norton Company 77
Novo Engine Co.
Nugent, Wm. W., & Co., Inc.

O

O.C.S. Mfg. Co., The
Ohio Injector Co., The
Oil Center Tool Co.
Oil Well Supply Co.
Oliver United Filters, Inc.
Osage Metal Company
Otis Pressure Control, Inc.

P

Page Fence Association
Page Steel & Wire Division of American Chain & Cable Co. 12
Parkersburg Rig & Reel Co.
Parkhill Truck Co.
Parkhill-Wade
Patterson-Ballagh Corporation 87
Pease, C. F., Company, The
Peerless Pump Division of Food Machinery Corp.
Penberthy Injector Co. 37
Pennington Signaling Core Barrel
Pennsylvania Grade Crude Oil Association
Perco, Inc. 82
Petroleum Advisers, Inc.
Petroleum Electric Power Association 74
Petroleum Rectifying Company 55
Petty Geophysical Engineering Co.
Phelps Dodge Refining Corporation
Pittsburgh-Des Moines Steel Company
Pittsburgh Equitable Meter Co. Inside Front Cover
Pittsburgh Steel Company 13
Plymouth Cordage Co.
Poist Tool Co.
Pomona Pump Co.
Portable Rig Co.
Powell, Wm., Co., The 91
Price, H. C., Co.
Pritchard, J. F., & Co.
Producing Equipment Directory 68
Pure Oil Co.

R

Reading-Pratt & Cady Division of American Chain & Cable Co.
Rector Well Equipment Co., Inc.
Reda Pump Co.
Reed Roller Bit Company 44
Regan Forge & Engineering Co.
Reilly Tar & Chemical Corporation 99
Republic Rubber Division of Lee Rubber & Tire Corp.
Republic Steel Corporation 65
Rockford Drilling Machine Division of Borg-Warner Company 100
Roebling's Sons Company, John A. 73
Ryerson & Son, Inc., Joseph T.

S

Safety Gas Main Stopper Co.
Schlumberger Well Surveying Corporation
Sealed Power Corp.
Security Engineering Co.
Seismic Explorations, Inc. 57
Seismograph Service Corp.
Shafer Bearing Corporation
Shand & Jurs Co.
Shell Development Company 6
Shell Oil Company, Incorporated
Sinclair Refining Company, Inc.
Skinner Co., M. B.
Smith, A. O., Corporation
Smith Company, E. M.
Smith Company, Howard
Smith, H. C., Oil Tool Co. 95
Smooth-On Mfg. Co., Inc.
Socony-Vacuum Oil Co., Inc.
South Chester Tube Co.
Southwestern Gas & Electric Company
Spang Chalfant, Inc.
Spang & Company
Sperry-Sun Well Surveying Co.
Spicer Mfg. Corp.
Standco Brake Lining Co. 94
Stanley Belting Corporation
Star Drilling Machine Co., The
Stearns-Roger Manufacturing Co.
Steel Founders' Society

T

Tansel Petroleum Co.
Taylor Forge & Pipe Works
Taylor Instrument Companies 10
Technical Oil Tool Corporation, Ltd.
Texaco Development Corporation 78
Thermoid Company
Thompson Tool Co., Inc.
Thornhill-Craver Co.
Thornton Tandem Co.
Timken-Detroit Axle Co.
Timken Roller Bearing Company
Timken Roller Bearing Company, Steel and Tube Division
Tobin, Edgar, Aerial Surveys 69
Toledo Pipe Threading Machine Co., The
Tretolite Company
Trinity Portland Cement Company
Tru-Line Corporation
Tubbs Cordage Co.
Tube-Turns, Inc.
Tulsa Boiler & Machinery Co.
Twin Disc Clutch Co.

U

Union Wire Rope Corporation
Unit Rig & Equipment Company
United Gas Pipe Line Co.
United Geophysical Co.
United States Rubber Company
United States Steel Corp., Subsidiaries
United States Steel Export Company
Universal Atlas Cement Co.
Universal Engineering Company, Ltd.
Universal Oil Products Co. 43

V

Vickers, Inc.
Viking Pump Co. 100
Visco Products Company
Vogt, Henry, Machine Co.

W

Walker, W. L., Co.
Wall-Colmonoy Corp.
Wall Rope Works, Inc. 94
Walworth Co. 1
Warren Petroleum Corporation
Waukesha Motor Co.
Wedge Protectors, Inc. 98
Well Equipment Manufacturing Corp.
Well Surveys, Inc.
Western Geophysical Company
Westinghouse Electric & Mfg. Co. 62
Wheeling Machine Products Company
Whitney Chain & Mfg. Co.
Wickwire Spencer Steel Company
Wilson Manufacturing Co., Inc.
Wisconsin Motor Corporation
White Engine Works
W-K-M Company, Inc.
Worthington Pump & Machinery Corporation 14
Wyatt Metal & Boiler Works

Y

Youngstown Sheet & Tube Co. Inside Back Cover

The Oil Man's Calendar Appears on Page 38